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Student perceptions of mastery learning strategies implemented in a nursing curriculum.

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STUDENT PERCEPTIONS OF MASTERY LEARNING STRATEGIES IMPLEMENTED IN A NURSING CURRICULUM

A Dissertation Presented

By

Marie G. Marshall

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DEDICATION

This work is dedicated to my husband, Warren. His encouragement, patience and self-confidence enabled me to feel "free" to pursue this endeavor.

and

To our children, David, Lisa and Paul, for carrying on with their own lives with relative ease.

and

To Mom, for always being there.

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Finally, my sincere thanks to my friends who were still there when this manuscript was completed.

ABSTRACT

STUDENT PERCEPTIONS OF
MASTERY LEARNING STRATEGIES
IMPLEMENTED IN A NURSING
CURRICULUM

(September, 1986)

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This study was designed to survey two groups of sophomore nursing students, in two associate degree nursing programs, in the Commonwealth of Massachusetts. The survey determined student perceptions of mastery learning concepts and strategies included in associate degree nursing curriculums in order to provide the impetus for acceptance of innovative teaching strategies. The groups were identified as the some mastery (s-m) group who used some, but not all, of the component of a mastery strategy in their traditional curriculum design and the all mastery (a-m) group who used a criterion-referenced mastery curriculum design. These student perceptions may help educators in the future to determine if a particular teaching-learning strategy increases student performance by facilitating learning; and, in the long run such improvements in learning could lead to reduced attrition in nursing programs in particular and in education in general.

A two part questionnaire was developed to elicit demographic and mastery perception data. Student perceptions to mastery items were based on a four point Likert scale.

Results of demographic data indicated that there were significant differences between the age variable and grades received in the first two nursing courses. The younger, s-m, group scored according to the bell curve while the grades of the older, a-m, group clustered to the top of the grade scale. Age also contributed to the significant differences at the .01 level between the perception of the two groups and research questions 1,3, and 4.

The results also indicated that significant differences existed at the .01 level between the groups and their perceptions to 11 of the 28 mastery items.

This study determined that the a-m group was generally more positive about their learning experiences than the s-m group. The a-m group earned higher grades; perceived that they had mastered basic concepts and that these basic concepts helped them with subsequent courses; and felt that grades were the result of understanding concepts and not of memorizing content. They generally felt that their instructors were sensitive to their needs and that their learning was individualized with a variety of teaching strategies offered to complement their individual needs.

Recommendations for further study include the development of a criterion-referenced curriculum, the development of a curriculum where students are able to learn at their own pace, and the development of a variety of instructional methodologies to meet the needs of a diverse student population.

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CHAPTER I

INTRODUCTION

BACKGROUND OF THE PROBLEM

Throughout the 1960's and early 1970's the community college system experienced unprecedented growth and development. The Commonwealth of Massachusetts was no exception with the establishment of fifteen community colleges across the state. An opportunity for education beyond high school, continuous through one's lifetime, was made available to all, regardless of economic background, social standing, or previous academic achievement (Deyo, 1967). These public institutions are nonresident, multipurpose, and community centered. They extend educational opportunity to the high school graduate as well as the adult learner who is identified by K. Patricia Cross as being over twenty-one with primary allegiance to work, family, and other nonacademic interests (Cross, 1981). The prediction is that adult learners will predominate in higher education in the future.

Despite this accessibility there is a high attrition rate of students at this time. With this attrition rate, there is currently a sense of institutional urgency to understand why students drop out. Phillips (1982) states that attrition studies are rapidly becoming critical for all institutions of higher education since the good old days of rapidly increasing enrollment and extensive financial support of public education have come to an end. Institutions must make every

student count since it is less expensive to retain old students than to recruit new ones. It is important to explore what influences students to stay in school and what new methods will assist in the retention of these students. There is evidence in the literature by a number of authors (Block, 1974; Bloom,1981; Caponigri, 1981; and Carroll, 1963) that mastery learning is one teaching/learning strategy that will increase student performance and reduce attrition.

In working with adult learners, one has to consider the evidence in the literature by a number of authors (Cross, 1981; Howe, 1977; Knowles, 1977; Tough, 1979; and Verduin, 1977) that the adult learner has different characteristics and needs than does the nonadult learner and should, therefore, be taught with the identified assumptions in mind. Knowles (1977) offers four assumptions of the adult learner:

1. Difference in self-concept.

   This assumption suggests that as a person matures and enters adulthood his self-concept changes from one of total dependency to one of increasing self direction. It is at this point that the person psychologically becomes an adult. Since adults are more likely to be self directing than are children, any course of study designed for adults should take this into consideration.

2. Differences in experience.

   An adult's background has been enriched with a variety of life experiences. This experience serves as a rich reservoir for learning. Any course of study for adults should take into consideration this vast experience.

3. Differences in readiness to learn.

> Andragogy suggests that adults should learn what they "need" to learn to function effectively in their many roles.

4. Differences in orientation to learning.

> Children have been conditioned to have a subject centered orientation to learning whereas adults tend to have a problem centered orientation to learning. This difference is primarily due to the difference in time perspective. The time perspective of the child is one of delayed application. What is learned in elementary school is preparation for secondary school, which prepares a student for work. On the other hand, the adult's time perspective is one of immediacy of application. Hence, the adult enters an educational program with a problem-centered orientation to learning (p 55).

Evidence of a high attrition rate among adult learners supports Knowles' assumption that their learning needs are not being met.

Educators need to facilitate learning. Teaching strategies should be developed that will help to maximize educational opportunities of the adult learner by keeping in mind their characteristics and needs. One approach that is compatible with the needs of the adult learner is mastery learning. Learning for mastery is a strategy that can be used in the traditional classroom--the concept is not new. Blooms' theory of mastery learning was adapted from Carroll's (1963) "A Model of School Learning." Bloom was impressed by Carroll's thesis that there are no <u>good</u> students and <u>bad</u> students, but merely students who learn at different rates of speed. The amount of learning that is accomplished in this theory depends on five factors (variables). These variables are summarized as follows:

1. <u>Aptitude</u> is the amount of time required by the learner to attain mastery of a learning task.

2. Quality of instruction is the degree to which the presentation, explanation, and ordering of elements of the task to be learned approach the optimum for a given learner.

3. The ability to understand instruction may be defined as the ability of the learner to understand the nature of the task to be learned and the procedures to be followed in learning it.

4. Perseverance is the time the learner is willing to spend in learning.

5. Time allowed for learning means that most, if not all, students can achieve mastery if they devote the amount of time needed to the learning.

The literature suggests that many adult learners have poor past accomplishments in education with resultant low self-confidence in their abilities. If educators accept the concept of lifelong learning as a construct that will directly increase societal power, that knowledge is power for society as a whole (Cross, 1981), then we must adopt teaching/learning strategies that will facilitate lifelong learning. Bloom (1982) states that:

> Mastery learning helps the student improve his self-image by enabling him to achieve mastery of small portions of the subject. This will lead him on to further mastery and a more positive attitude toward learning in general (p 153).

This positive attitude created by a sense of achievement may indirectly reduce attrition.

Alan Tough's (1979) data on adult learning projects support the fact that the adult learner is self-directed and has a strong desire for positive reinforcement. Rouche (1968) emphasizes the importance of accommodating individual differences and added the need for a caring student-centered learning/teaching environment. Bloom (1982) noted that

the kind and quality of instruction and the amount of time available for learning should be made appropriate to the characteristics and needs of each student. Bloom (1982) states: "The strategy for learning and the amount of time needed by the learner for mastery must vary according to each student's needs" (p 188). Although there has been an abundance of literature on the need for individualized instruction in the classroom, Bloom (1982) summarizes that there is "still centrality of instruction for groups of learners. This instruction is likely to be very effective for some learners and relatively ineffective for some learners" (p 9). Kilody (1975) also found the traditional lecture method to be an inefficient learning technique for all except the highest level of students and that lecture methods of teaching must be balanced by more concrete activities where students can engage in manipulation of materials and verbal explanations among themselves. He also believes that learning activities must include some type of active participation or response from the student. At Bristol Community College, educators in general, and nursing educators, in particular, traditionally use the lecture as a primary teaching strategy even though other methods, such as small group discussions, may be utilized. Wong (1971) states: "Nursing students who have imbibed a great deal of instruction in the classroom lectures are unable to relate their instructional knowledge to actual clinical performance" (p 161). Bregg (1958) insists that, "students of service oriented professions must be able to do more than simply absorb content and pass examinations. They must be able to transfer and to relate the learned principles to nursing practice" (p 1120).

The investigator's interest in this area stems from years of observing students drop out of the nursing program for academic reasons. Many of these students have progressed well in the psychomotor and affective domain but were slower to grasp cognitive concepts. In reviewing the grades for these nursing students from 1980 to 1983, the findings were that at least fifty percent of students who completed the course received a C grade. Many of these students who did not complete the semester left with a failing grade. These students, given more time and/or individualized assistance, may have been able to complete the program. Warner (1982) cited academic factors as the primary reason that students withdraw from college. Students who drop out due to failing grades may become problems for society because they may suffer personal disappointments, financial setbacks, and lowering of self-esteem. If these students are going to be retained, it will become increasingly important to keep their needs in mind when planning teaching strategies and revising curriculum content.

PURPOSE OF THE STUDY

The purpose of the study was to determine student perceptions of mastery learning concepts and strategies included in associate degree nursing curriculums in order to provide the impetus for the acceptance of innovative teaching strategies. These innovative teaching strategies may help to increase student performance and reduce attrition.

The long-range purpose of this study is to provide the impetus for the use of alternative teaching strategies that will facilitate learning and reduce attrition of students especially in an associate degree nursing program.

BACKGROUND FOR THE STUDY

Based on Bloom's (1981) assumption that most students can learn what the schools have to offer, some mastery learning/teaching strategies have been incorporated into the curriculum of the first year nursing courses at Bristol Community College. The first course, Nursing 11, has been divided into small units. Clinically, students are divided into small groups; and faculty by using correctives, are able to give individual attention to content or skill areas and student learning styles. In the nursing laboratory, there is diagnosis of skills; practice and peer-tutoring are provided until the student is comfortable with the new motor skill. There are no grades involved in this pass/fall aspect of clinical practice and students may advance at their own pace. In order to compare the perceptions of these students who have had some experiences with components and strategies of mastery learning, the perceptions of a second group of nursing students enrolled in an all mastery program will be surveyed. For brevity in writing, these groups are identified as the some mastery, (s-m) and the all mastery, (a-m) groups. A questionnaire was designed to determine student perceptions of mastery learning concepts and/or strategies. The variables of time, perseverance, quality of instruction, and the ability to understand instruction were used as the framework to construct the questionnaire items. Some of the components of a mastery learning/teaching strategy found in the questionnaire items, are as follows:

1. formative evaluation
2. learning aids (correctives)
3. small group sessions
4. diagnosis of learning needs

5. summative evaluation
6. peer tutoring

In order to affect curriculum change it will be useful to have student perceptions of innovative teaching/learning strategies and/or components of mastery learning prior to curriculum review. Positive student perceptions will assist in making a case to the faculty for a nursing curriculum based on mastery learning strategies. Those strategies/components not fully implemented for the group with minimal mastery contact will be identified with a "dot" in the questionnaire.

The questions that guide the study are as follows:

1. Do student nurses perceive that current teaching strategies are adequate to meet learning needs?
2. Do student nurses perceive that learning aids (correctives) facilitate learning?
3. Was there enough time to master basic concepts?
4. Did mastery of objectives in the first nursing course help with the second nursing course?
5. Is nursing faculty sensitive to learning needs?

All of the above lead to the recognition of a problem which exists in Massachusetts Community Colleges: The characteristics of the problems are a high attrition rate, students' inability to transfer concepts, students' nonmastery of basic concepts, high program cost when students cannot be replaced, and loss of student self-concept with academic failures.

SIGNIFICANCE OF THE STUDY

An important aspect may be to determine student perceptions about innovative teaching strategies by providing information relative to the effects of mastery learning strategies on the adult learner. There is

evidence in the literature that a mastery strategy can serve as a means to reduce attrition, individualize learning, and promote better retention of course material. Thus, it may be helpful to determine student perceptions of the components of a mastery strategy prior to curriculum review.

Another area of significance is the promise of providing data that may help to change educators' views of adhering to the bell-curve of grading. Many educators are content when grades reflect this curve at the end of any given semester. This grading concept is not appropriate for the student in nursing where mastery of content is of utmost importance in rendering quality patient care.

Also, these nursing programs are traditionally highly structured and lecture oriented. In spite of selective admission policies there is an attrition rate of one-third (Levitt, 1974). This high attrition rate is costly in view of limited funds available for nursing education today. Students are lost to nursing education, which is time oriented and fast paced, because they have not mastered basic concepts.

The study may be significant to students, faculty, and administrators interested in innovative strategies that enhance learning and may indirectly reduce student attrition.

SAMPLE SELECTION

The population of this study involved two groups of sophomore nursing students in two community college programs in the Commonwealth of Massachusetts. Sophomore nursing students are in the third semester of a four semester associate degree nursing program. The all mastery, a-m, group, was exposed to a total mastery learning curriculum design.

The some mastery, s-m, group was exposed to a traditional curriculum which included some of the components of mastery learning in its design.

One group of students from Bristol Community College was chosen because the investigator witnessed high attrition among this group of students. The faculty made an attempt to promote retention of these students by including some, but not all, of the mastery learning strategies into the curriculum. The investigator wanted to determine the students' perception of these teaching/learning strategies which are attributed to encouraging mastery of the subject matter.

The investigator wanted a group of students exposed to an all mastery curriculum for the second group in order to compare the perceptions of the two groups of nursing students. One school of nursing in the Commonwealth of Massachusetts was found that provided its students with a criterion referenced curriculum based on the concepts of mastery learning and this school agreed to participate in this study. The mastery learning concepts and/or strategies to which the Bristol Community College nursing students were not exposed will be identified by a dot "." in the questionnaire. There were approximately seventy students in each of the classes. They all were asked to participate in the study on a volunteer basis on their scheduled free time.

Borg and Gall (1971) contend that:

> The general rule for determining sample size is to use the largest sample possible. The reason for this rule is that although we generally study only samples, we are really interested in learning about the population

> from which they are drawn. The larger the sample, the more likely are their means and standard deviations to be representative of the population means and standard deviation (p 123).

Thus, all second-year student nurses in both groups were asked to participate.

Gay stated that for "descriptive research, a sample size of ten percent is a minimum" (p 77). All of the students in both groups participated which exceeded the required minimum.

INSTRUMENTATION

The instrument utilized for this study was a two part questionnaire. (see Appendices B, C and D)

In deciding on a method of instrumentation, the writer noted that descriptive data are typically collected through the use of an interview, a questionnaire, or observation (Borg & Gall, 1981, p 189). The writer researched the literature on the interview process and although there are advantages of the interview process there are disadvantages. Borg and Gall (1971) state that:

> although it has a number of important advantages over the other data collection tools, the interview does have very definite limitations. Most importantly, the very adaptability gained by the interpersonal situation leads to subjectively and possible bias. They also mention that eagerness to please the interviewer, a vague antagonism that sometimes arises between the interviewer to seek out answers that support his/her preconceived notions are other factors that attribute to biasing data obtained in the interviews (p 211).

In discussing the limitations of the questionnaire, Borg and Gall (1981) state that: "It provides no immediate feedback; they are often shallow; they fail to dig deeply enough to provide a true picture of opinions and feelings" (p 211).

The questionnaire allows for data collection from a much larger sample and is less expensive when considering the time of students and the researcher involved. It was felt that students would be less threatened by filling out a questionnaire than by a personal interview.

A cover letter was developed that shared with students the purpose of the study and the value of their input to faculty for possible curriculum changes. (see Appendix A) They were offered a copy of the results of the questionnaire survey.

In developing the questionnaire, several issues were considered. The first issue was to develop an instrument that would be easily understood by all those asked to complete it. After reviewing the literature by a numbers of authors (Borg and Gall, 1971; Fox, 1969; and Gay, 1976) on the development of a questionnaire, a list of questions thought to be important in assessing student perceptions was formulated. Three faculty members were interviewed for their perceptions of the components/variables of mastery learning. Many of the items on the questionnaire were based on faculty input. These questions along with research questions to be answered were then brought to a member of the Data Analysis Group at the University of Massachusetts. This consultant then suggested revisions and a method of data analysis. The document consisted of two sections: the first section contained 10 base line data questions on the respondents and the second section had 28 perception questions for the s-m group and 30 perception questions for the a-m group. The a-m group was asked about summative and formative testing to which the s-m group had not been exposed. These perception questions were rated on a four-point Likert scale. The dissertation

committee also provided input for recommendations and revisions. Form 7a was signed by the School of Education Human Subjects Review Committee prior to field testing the instrument and making final corrections. The instrument was field tested with evening nursing students who were at the same course level as the day students to be tested. Fourteen students were in this program. The first part of the questionnaire contained demographic data such as age, previous degrees, grades in the first nursing course, years since high school graduation, and number of hours worked per week to see if there was a correlation of any of these demographic variables to the student perceptions of the variables of mastery learning.

This information may provide data on student perceptions of mastery learning as an alternative teaching/learning strategy that may enhance retention of material and thus indirectly reduce student attrition.

DATA ANALYSIS

Once the respondents returned the questionnaire, descriptive statistics were tabulated using the Statistical Package for Social Science (SPSS). The tabulated returns are presented in several forms. Part one was computed as to means, frequencies, and percentages. T-Tests for means were done for each research question. Since each research question may have several items in the questionnaire, the questionnaire items were combined as to which research question was answered, then the demographic data were cross tabulated with each research question for analysis of variance i.e., correlation coefficients.

Responses from the study were organized to provide baseline data on student perceptions of the various components and strategies of mastery learning that they have experienced or that are deemed desirable by the investigator.

DESIGN AND METHODOLOGY

Many research methods were investigated before concluding that the descriptive survey was the most appropriate for this study. Fox (1969) stated that:

> in educational research, there are two conditions which occurring together suggest and justify the descriptive survey. First, that there is an absence of information about a problem of educational significance and, second, that the situations which could generate that information do exist and are accessible to the researcher (p 424).

Borg and Gall (1971) state, "Descriptive research involves collecting data in order to test hypotheses or answer questions concerning the current status of the subject of the study" (p 187). The writer collected data on the research questions presented in the previous section.

This descriptive survey collected data from second-year nursing students in two associate degree programs in the Commonwealth of Massachusetts to determine their perception of mastery learning/teaching strategies as an alternative method of teaching.

Three other methods were explored. The writer summarizes as follows:

The historical method clearly involves studying, understanding, and explaining past events. It was concluded by the writer that because historical research's purpose is to arrive at conclusions concerning causes, effects, and trends of past occurrences, it was not appropriate methodology for this study. Concerning the experimental methodology, Gay (1976) states:

> in experimental research, the researcher manipulates at least one variable and observes the effect on one or more dependent variables. The essence of experimental research is control. The researcher strives to insure that the experience of the groups are equal (p 68).

Since one does not influence perceptions without manipulating one group for purpose of comparison, the writer concluded that the experimental method would be impractical for this study.

The correlation research method was also explored. Gay (1976) states that: "Correlational research attempts to determine whether and to what degree relationships exist between two or more quantifiable variables" (p 68). This writer will not be attempting to quantify students' perception; therefore, this method was deemed inappropriate for the study.

Thus, the descriptive study method was deemed most appropriate for this study.

LIMITATIONS OF THE STUDY

Many factors affect students grades, this study was limited to addressing the perceptions of third semester associate degree nursing students to the advantages of mastery/learning teaching concepts and strategies incorporated into their curriculums.

These data were subjective because of the limitations inherent in a self report.

This study involved the perceptions of two groups of nursing students in two separate associate degree nursing programs, thus, the findings cannot be generalized to other populations.

Although the nursing faculty strive for an accurate assessment or evaluation of the learner's level of knowledge (Bloom, 1971, p 156), the nursing curriculum is not yet totally structured in the order of cognitive hierarchy. The nursing student, therefore may begin the course educationally disadvantaged. Teaching strategies also leave much to be desired because the bulk of teaching is to the majority with a few small group sessions to facilitate learning and to diagnose learning needs.

CHAPTER II

Review of the Literature

To serve as the background for this research, the review of the literature focused on studies and writings on mastery learning. Mastery learning was defined; its theory and variables were presented and significant related studies were addressed.

DEFINITION OF MASTERY LEARNING

Mastery learning is a teaching/learning strategy designed to be implemented in the traditional classroom setting. Its goal is to have all students reach the high degree of learning previously attained only by the "A" students. This is accomplished by dividing the course into small units, by specifying objectives and by providing feedback and alternative learning experiences. Mastery learning helps all students learn the way the best students learn (Bloom, 1976). Based on the premise that aptitude is proportional to learning rate (Carroll, 1963) mastery learning attempts to maximize the quality of classroom instruction and minimize the time a student needs to learn. This is accomplished through two distinct phases: 1) planning, which includes setting standards and developing materials and 2) implementation, which includes monitoring student performance, providing frequent feedback to the student, and providing alternative learning experiences.

CARROLL'S THEORY AND MODEL

Mastery learning is based on the conceptual model that John B. Carroll developed in A Model on School Learning (1963). He stated that the degree of school learning of a given subject depends on the student's perseverance combined with his/her opportunity to learn relative to his/her aptitude for the subject, the quality of his/her instruction, and his/her ability to understand instruction.

This conceptual model is important to Mastery Learning Theory because it rests on the belief that there are no "good" and "bad" students, but merely students who learn at different rates of speed. The five factors in Carroll's model are defined as:

1. Opportunity to learn: the time allowed for learning to take place.

2. Perseverance: the amount of time the learner is willing to spend actually engaged in the learning.

3. Aptitude: the amount of time the learner needs to attain mastery of the task under optimal instructional conditions.

4. Ability to understand instructions: the ability of the learner to understand what is to be learned and the steps he is to follow in order to learn the task.

5. Quality of instruction: the degree to which instruction is optimal for a given learner on a given task (Carroll, 1963).

Carroll (1963) states that schools respond to differences in learning rates in many ways for example:

1. Schools may ignore the difference in the learning ability of students because the prevailing view is that the normal distribution of grades describes the quantitative differences in the student's ability when measured by an intelligence, aptitude,

or achievement test. Bloom (1976) summarizes his findings as follows: Individual differences are manmade and accidental rather than fixed in the individual at the time of conception. His major conclusion is: "what any person in the world can learn almost all persons can learn if provided with appropriate and prior conditions of learning (p 163)."

2. Schools may allot a certain amount of extra time for every student, in the form of release time, for the purpose of student tutoring. This helps only those students who seek assistance with learning needs.
Carroll (1963) postulated that most learners could achieve equally high levels of learning in a school subject if "each" student is provided with the time and quality of instruction that he/she needs when a learning need is diagnosed and not only at the time dictated by school policy. (p 164)

These are a few of the stimulating ideas, although not new, that have motivated this inquiry into the merits of mastery learning.

The concept of mastery learning is not new. The belief that all can learn, and learn well was found in the writing of early educators and philosophers such as Comenius, Pestalozzi, Herbart, Lock, Washburn, and Morrison (Bloom, 1976).

There have been many approaches to mastery learning; one approach was the Winnetka Plan of Carleton Washburn and his associates. Another was an approach developed by Professor H.C. Morrison at the University of Chicago. These approaches shared many features. First, mastery was defined in terms of particular educational objectives each student was expected to achieve. The objectives were cognitive, affective, and even psychomotor. Second, instruction was organized into well-defined learning units. Third, complete mastery of each unit was required before students could proceed to the next unit. Fourth, an ungraded diagnostic

test was administered at the completion of each unit to provide feedback on the adequacy of the student's learning (Block, 1971).

Eventually, the idea of mastery learning disappeared and did not resurface until the late 1950's and 1960's as a corollary of programmed instruction. A basic idea underlying programmed instruction was that the learning of any behavior rested upon the learning of a sequence of less complex component behaviors (Skinner, 1954).

Programmed instruction seemed so promising that by the mid 1960's there were major attempts to develop entire programmed instructional curricula. Two examples were Programmed Instruction (PI) and Computer Assisted Instruction (CAI). These programs did not survive for long. Some reasons given for the failure were that the programs were too behavioristically oriented and that students became bored or lost interest, programs were expensive to maintain, students had limited muscle activity, and students did not actively participate. A few students did attain mastery, but the process did not provide a useful learning model.

There is a resurgence of interest in Computer Assisted Instruction now due to the renewed interest in computer technology. Perhaps now that more of the population are able to use and understand computers, more teachers and pupils will utilize computers as an alternative method to assist in the process of education.

It was Bloom (1966) who transformed Carroll's conceptual model into an effective working model for mastery learning. In making a case for mastery learning, Bloom (1976) states that each teacher begins a new term with the expectation that about one-third of his students will adequately

learn what has been taught. This set of expectations is the most wasteful and destructive aspect of the present educational system. It reduces the aspirations of both teachers and students, it reduces motivation for learning in students, and it systematically destroys the ego and self-concept of a sizeable group of students who are legally required to attend school for years under conditions which are frustrating and humiliating. The cost of this system in reducing opportunities for further learning and in alienating youth from school is destructive to society in general.

Bloom (1968) states that teachers have used the normal curve in grading students for so long that they have come to believe in it. When grades are distributed in such a fashion, one-third of the students will be at the upper level, one-third at the lower, and about one-third will fall in the middle of the curve. He has stated that there is nothing sacred about the normal curve and that educators should be striving to have the majority of students learn what is taught and achieve a curve that is a slightly rotund inverted U. He feels that if there is effective instruction the distribution of achievement should be very different from the normal curve. As educators, strategies should be used which will take individual differences into consideration but which will do so in such a way as to promote the fullest development of the individual.

BLOOM'S ADAPTATION OF CARROLL'S THEORY

In 1968 Bloom adapted Carroll's learning for mastery. From his research, in both educational laboratories and classrooms, it became

evident that a large portion of slower learners can learn to the same achievement level as the faster learners. When the slower learners do succeed in attaining the stated objectives, they appear to be able to learn equally complex and abstract ideas that they can apply to new problems. Bloom contends that individual differences in learning are observable phenomena which can be predicted, explained, and altered in a great variety of ways. In contrast, individual differences in learners are more difficult to explain and modify. Bloom determined that three interdependent variables account for much of the variation in school learning:

1. Cognitive entry behaviors - the extent to which the student has learned the prerequisites to learn a subject.
2. Affective entry behaviors - the extent to which the student is or can be motivated to engage in the learning process.
3. Quality of instruction - the extent to which the instruction is appropriate to the learner.

In education the ways and the means of getting more students to reach a high level of competence must be found. Mastery learning may be one means to achieve this goal.

Spell (1972) compared mastery and traditional learning systems and supports Bloom by listing the following assumptions concerning the mastery learning model:

1. Students differ in their aptitudes and abilities for learning and are paced and assessed on an individual basis.
2. Instruction is designed for individual styles in learning and competencies.
3. Sufficient time is allowed for learning.

4. Course planning is oriented toward desired terminal performances.

5. Instructors are accountable for how well students learn.

6. The role of the instructor is primarily that of a learning manager; e.g., selecting and developing appropriate instructional strategies based on individual students' needs to achieve objectives.

In order to improve the education of each student, views about students and their learning need to change. The current views have grown out of past practices and will not change until educators alter these practices. When these renewed learning strategies succeed in promoting more effective learning, both teacher and student will change their views on education.

Some of the terms and techniques used in mastery learning are not found in traditional learning systems. They provide some of the uniqueness in mastery learning and are listed as follows:

DEFINITION OF TERMS

Mastery Learning - This is a teaching/learning strategy that can be implemented in the traditional classroom setting. Mastery learning is based on the premise that aptitude is proportional to learning rate and, with specific cognitive and effective prerequisites, most students can achieve a high level of competence. A pre-determined standard of achievement.

Formative Evaluation - This type of evaluation indicates that quizzes are used as diagnostic tools to inform both teacher and students what each student has learned and what each needs to study

more thoroughly. These are usually given at the end of each unit and not counted towards a final grade.

Corrective - These specific assignments are used to direct students to alternative learning experiences that will help them to correct any deficiencies revealed by formative tests. Correctives are used to provide individualized instruction and may include alternate books, peer tutoring, instructor assistance, work books, audio-visual aids, programmed instruction, computer assistance, study groups, etc.

Summative Evaluations - These are tests that do count for a grade, usually one or two per semester. These tests come at the end of a pre-determined interval. Summative evaluation provides general assessment of the entire course on whether or not mastery has indeed occurred.

Criterion Referenced - This term usually indicates that the curriculum is designed with clear terminal goals/objectives. Mastery learning is more than just criterion referenced. The instructor, as facilitator, assists in diagnosing the students' unmet goal/objectives and assists the student by suggesting correctives to facilitate learning.

Some Mastery (s-m) - These are students who are enrolled in a traditional nursing curriculum in which the curriculum contains some mastery learning strategies or instructional modalities.

All Mastery (a-m) - Those students enrolled in a criterion referenced nursing curriculum that is guided by a mastery model.

IMPLEMENTATION

Offering a mastery course involves a great deal of work and a great deal of teacher organization. Some of the components of the process are:

1. The teacher presents objectives for each learning unit to the students.
2. The course materials are organized in cognitive sequence.
3. Assignments are presented for the current lesson--one lesson at a time.
4. Formative quizzes occur at the end of each learning unit.
5. Correctives and remediation must be prepared for each unit.
6. A summative test will be given at the end of the course.

In order for one to prepare course materials in a cognitive sequence, it is essential to understand Bloom's theory and his use of the Taxonomy.

BLOOM'S THEORY AND TAXONOMY

Benjamin Bloom's hierarchical-cumulative learning model is based on Stimulus-Response theory. As a Stimulus-Response theorist, he places much of the emphasis for learning on the appropriateness of relevant stimuli in the form of teaching procedures, selection of materials, and instruction strategies (Bloom, et al, 1971). His main concern, however, is the accurate assessment or evaluation of the learner's level of knowledge so that the appropriate teaching experiences may be presented with the optimum effect of increased use or application of the knowledge. To this end, he has developed a "Taxonomy of Educational Objectives" (Bloom, 1971, p 156).

Taxonomy of Educational Objectives was published in 1956 in Handbook I, Cognitive Domain. The Taxonomy is hierarchical in that it classifies objectives which involve simple to complex intellectual tasks. Each category is assumed to include behaviors more complex, abstract, or internalized than the previous category. The Taxonomy has six levels: I Knowledge; II Comprehension; III Application; IV Analysis; V Synthesis; and VI Evaluation. They are described below:

Knowledge level I. This is the lowest level and includes the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting. Evaluation of this level involves little more than bringing to mind or remembering appropriate material. Learners at this level must also be able to organize or reorganize the problem such that the appropriate signals, cues, and clues will bring out whatever knowledge the learner has about the subject. Subcategories under knowledge are:

I a. Knowledge of specifics such as the recall of specific bits of information with the emphasis on symbols with concrete referents. This would include knowledge of terminology; for example, a familiarity with a large number of words in their common range or meanings, and knowledge of specific facts such as dates, events, persons, places, etc.

I b. Knowledge of ways and means of dealing with specifics, such as organizing, judging, and criticizing. This is an intermediate level of abstraction between specific knowledge on the one hand and knowledge of universals on the other. This is more of a passive awareness of the materials rather than an active use of them. Included in this subcategory would be knowledge of conventions, knowledge of trends and sequences, knowledge of classification and categories, knowledge of criteria, and knowledge of methodology.

I c. The last subcategory under knowledge deals with knowledge of the universals and abstractions in a field. These are the large structures, theories, and generalizations which are generally used in solving problems in a particular subject area. This would include knowledge of principles and generalizations and knowledge of theories and structures; such as knowing the complete formulation of the theory of evolution or being able to recall major generalizations about a particular culture.

Methods for evaluating the knowledge level usually consist of multiple choice questions, fill-in the blank, true or false questions, or definition questions. These can be in the nature of total recall or recognition tasks, but it must be remembered that these tests evaluate for knowledge level only and do not evaluate the learner's comprehension of the material. This is the next level in Bloom's Taxonomy.

Comprehension level II. This represents the lowest level of understanding in that the learner can use the material without relating it to other material or seeing its fullest implication. Three subcategories are presented under comprehension:

II a. Translation and the ability to understand nonliteral statements such as metaphor, symbolism, irony, or exaggeration.

II b. Interpretation and the ability to rearrange or interpret a new view of the material.

II c. Extrapolation and the ability to predict the continuation of the given material.

An example of this level might be to ask the learner to translate an abstraction, such as some general principle, by giving an illustration or sample.

Level III - application. The third level is the ability to use abstractions in particular and concrete situations. This would include applying principles and generalizations to new problems and situations,

such as "the ability to apply social science generalizations and conclusions to actual social problems" (Bloom, 1956).

> Level IV - analysis. This level includes the ability to: Break down a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between the ideas expressed are made explicit. Such analyses are intended to clarify the communication, to indicate how the communication is organized and the way in which it manages to convey its effects, as well as its basis and arrangement (p 48).

The analysis of elements requires the ability to distinguish facts from hypotheses; the analysis would be the ability to determine the consistency of hypotheses with given information and assumptions and to analyze organizational principles such as recognizing the general techniques used in propaganda and advertising. Bloom states that the evaluation or educational objectives for this level are not generally found at the elementary level of instruction and are more often found at the secondary and higher education levels. He also states that some justification for this may be found in Piaget's work which proposes that preadolescents are incapable of this kind of reasoning since it requires the learner to separate himself from the material and to view it in terms of how it does what it does both literally and figuratively (Bloom, 1971 p 42).

Bloom also recognizes the difficulties inherent in teaching and evaluating this level but stresses the importance of acquiring this level of cognitive ability in a complex, technological society. The method for evaluating this level is aimed at the learner's ability to recognize function, purpose, and use of material.

Level V - synthesis. This level enables the learner to form a whole by integrating the elements and parts of the whole so that a pattern or structure is produced which was not previously observable. Subcategories of this level include:

V a. Production of the unique communication such as writing well organized statements and ideas.

V b. Developing a set of abstract relations to explain or classify data such as formulating an hypothesis based on an analysis of factors.

V c. Producing a plan for ways of testing an hypothesis.

Level VI - evaluation. The last and highest level of cognitive ability is evaluation. This enables the learner to make judgements about the value of material and methods for given purposes. This would include the ability to make judgements in terms of internal evidence such as identifying logical fallacies in arguments and making judgements in terms of external criteria such as comparing a work with the highest known standards in its field.

The purpose of Bloom's Taxonomy is to provide the instructor with a detailed map for structuring both instruction and learning through the use of an evaluation system that proceeds from the simple to the most complex. By using this system, it should be possible to structure any given material or topic so that mastery of that material can be attained by everyone.

The Taxonomy functions both as a summative evaluation in that it assesses total levels of mastery and as a formative evaluation for the purpose of diagnosing the learner's present level of mastery. The formative evaluation is achieved by breaking the material to be learned into its smallest and simplest units and then progressing to the more

advanced levels by increasing the complexity of the units. Through diagnosis, the teacher can then structure the learning environment in the form of specific prescriptions based on the learner's level or area of difficulty.

Educational researchers have developed instructional strategies which enable a majority of students to do well. This mastery model suggests that almost all students can master subject or achieve at a desired level of competition in a subject. As summarized by Block:

> [Mastery learning] suggests procedures whereby each student's instruction and learning can be so managed, within the context of ordinary group-based classroom instruction, as to promote his fullest development. Mastery learning enables 75 to 90 percent of the students to achieve to the same high level as the top 25 percent learning under typical group-based instructional methods. It also makes student learning more efficient than conventional approaches. Students learn more material in less time. Finally, mastery learning produces markedly greater student interest toward the subject learned than usual classroom methods (1971, p 3).

The Taxonomy was used as a base for the essential components of the mastery model. In this study for example, mastery is defined in terms of particular behavioral educational objectives for each unit. Thus, units are hierarchically sequenced so that performance depends upon prior learning and diagnostic testing. Supplemental instruction is provided for those students who do not meet the mastery level on the diagnostic test.

Bloom (1971) recognized individual differences in learning as aptitudes that vary as a function of the amount of time it takes to attain mastery. He recognizes that learners may differ as to their motivation as well as their ability to understand instruction and the procedures they must follow in order to learn the task. It is the

teacher's responsibility, however, to overcome these differences in each learner. His emphasis, therefore, is on the quality of instruction as it applies to the type of presentation, explanation, and ordering of the task to be learned.

This quality of instruction implies that the teacher will individualize group instruction by providing each learner with feedback and correctives to meet desired cognitive behaviors. There should be an increase in student self-confidence and motivation with active participation and mastery of objectives.

In a mastery model of instruction teachers need not change their method of content delivery because the lecture format or didactic method in classroom instruction found most often in college instruction is used.

It is doubtful, however, that the Taxonomy is used by college instructors as an evaluation tool for formative purposes. Most often the evaluation is used for grading purposes only.

The Taxonomy should be used for formative purposes so that students receive assistance in the form of correctives. This is necessary in order to meet stated objectives and/or cognitive entry behaviors for each unit. These students would then face each successive unit with the cognitive prerequisites and the potential to master the context. When individual student needs are diagnosed and corrected, retentions of basic concepts and better performance on summative evaluations is the positive outcome. In nursing, when the emphasis is on maximum retention of concepts, it is essential that students demonstrate competency in all levels of Bloom's Taxonomy.

Since most nursing students are adult learners, it seems appropriate to also mention characteristics and needs of the adult learner.

THE ADULT LEARNER: characteristics and needs.

The adult learner has different characteristics and needs and must be taught with assumptions of the adult learner in mind. Some of these assumptions are found in the writings that follow.

Rouche (1968) pointed to the necessity for community colleges to provide instruction on the level needed by the student if the student is to be given a second chance to complete his/her education. He further emphasized the importance of accommodating individual differences and added the need for a caring and student-centered learning/teaching environment. He listed 5 ways teachers can create an environment for learning as follows:

1. Teachers should demonstrate caring or expectations by affirming students as OK people.
2. Teachers should know each student as an individual.
3. Teachers should demonstrate caring or expectations by attending to each student.
4. Teachers should give of themselves to students.
5. Teachers should monitor student achievement to provide reinforcement and to assist as soon as possible when a student has become confused.

Rouche (1968) and Bloom (1971) agree that individuals learn at different rates and that accommodating individual differences is of the utmost importance in teaching. Bloom (1981) further noted that the kind and quality of instruction and the amount of time available for learning should be made appropriate to the characteristics and needs of each

student. The strategy for learning and the amount of time needed by the learner for mastery must vary according to each student's needs.

The National Association for Public School Adult Education (NAPSE) in How Adults Can Learn More, Faster (1962) goes further in some assumptions then Knowles. These assumptions are:

1. Contrary to popular opinion, the mind does not deteriorate with age.

2. Adults are able to do fast memorizing more efficiently than young children.

3. Adult learners have a great advantage over youngsters due to years of experience.

4. Adults learn more efficiently because they have stronger reasons for learning.

Rogers' (1969) student-centered approach to education contributes to adult learning theory and practices and supports many of the ideas held by the humanistic psychologists. Roger's student-centered approach to education was based on 5 hypotheses. They are:

1. We cannot teach another person directly; we can only focus his learning.

2. A person learns those things which he perceives as being important or relevant.

3. Experience, if assimilated, would involve a change in the organization of the self.

4. Experience which is inconsistent with the self can only be assimilated if the self is replaced.

5. The situation which most effectively promotes learning is one where threat to the self of the learner is minimal.

Knowles (1973) has perhaps influenced the development of adult learning theory more than any other educator or psychologist. Knowles has the most comprehensive treatment of the approach and its application

of adult learning theory. He emphasizes that adult learning theory (andragogy) is a process approach or model. The model, according to Knowles, employed by most traditional educators is one in which the instructor decides in advance what skills or knowledge needs to be learned. The instructor then arranges the body of content into logical units and selects the most efficient means for transmitting this content. In contrast, the adult (andragogical) instructor (facilitator, agent) prepares a set of procedures for involving the learner in the following:

1. Establishing a climate conducive to learning.
2. Creating a mechanism for mutual planning.
3. Diagnosing the needs for learning.
4. Formulating program objectives.
5. Designing a pattern of learning experience.
6. Conducting these learning experiences with suitable techniques and materials.
7. Evaluating the learning needs (Knowles, 1978).

Alan M. Tough (1979) concurs with Knowles (1977). He involves the learner by claiming that the role of member rather than that of student makes a significant difference in the behavior of a learner. He feels that if you say student, you imply dependence whereas member implies mutual agreement.

Dr. Mason Bunker's (1983) beliefs concerned with the adult learner are quite congruent with adult learning theory and are as follows:

Learners must be actively involved in their learning.
Learners must share in deciding what their learning will look like.
Learners must receive feedback and support from the educator.
Trainers must meet the content needs of the learner.
Trainers must work from the strengths of the learner.

Trainers must work toward helping the learner become more self-directed and self-initiating.

Knox (1977) in his 7 modifiers to adult learning takes into consideration characteristics and needs of adults. He writes about interest, the abundance of personal problems, and the need for self-paced instruction. They are:

1. Condition: Physiological condition and physical health can affect learning and cognition in various ways. Ill health can restrict attention given to external events.

2. Adjustment: The effective facilitation of learning is less likely when there is substantial personal or social maladjustment in the learning situation.

3. Relevance: The adult's motivation and cooperation in the learning activity is more likely when the tastes are meaningful and of interest to the learner.

4. Speed: Especially for older adults, time limits and pressures tend to reduce learning performance.

5. Status: Socioeconomic circumstances are associated with values, demands, constraints, and resources that can affect learning ability. Level of formal education tends to be a status index most highly associated with adult learning.

6. Change: Social change can create substantial differences between older and younger age cohorts (such as two generations) regarding the experience and values internalized during childhood and adolescence.

7. Outlook: Personal outlook and personality characteristics, such as openmindedness or defensiveness can affect the way in which an adult deals with specific types of learning situations.

Cross (1981) states that adults learn best when instruction is based upon the students' prior knowledge and desire for the information offered. Success will be likely if adult learners take courses that are relevant and goal directed (p 125).

Sheehy (1976) alludes to the vulnerability of the adult learner in her analogy of the adult to a hardy crustacean in Passages (1976):

> The lobster grows by developing and shedding a series of hard, protective shells. Each time it expands from within, the confining shell must be sloughed off. It is left exposed and vulnerable until, in time, a new covering grows to replace the old (Sheehy, 1976, p 32).

The adult learner is very vulnerable in a new environment such as college. The first move into the classroom leaves the person exposed, vulnerable, and scared. The protective shell has been left at home. With positive reinforcement and feedback there will be an inner growth or some movement of ascending Abraham Maslow's self-actualization ladder and with comfort and security, a new element of self-confidence replaces the old one of insecurity and allows for new learning.

Characteristics of adults as learners are mentioned by a number of authors (Knowles, 1978; Cross, 1981; Gordon, 1980; Howe, 1977; Knowles, 1977). The same characteristics emerge. The following characteristics were complied from these sources:

1. The adult learner is older and may be more fearful of new roles.
2. The adult learner has self-concept needs.
3. The adult learner is more self-directed.
4. Personal roles may take priority over the student role.
5. They do not hold the faculty in deference (they are not awed by faculty).
6. They are more attuned to question everything.
7. They are demanding; they need immediate gratification.
8. They are anxious about rules, regulations, and grades.
9. They are sensitive to the quality of instruction.

10. They are goal oriented.

11. They may already be a professional.

These characteristics have implications for educators teaching adults.

Litwin (1978) took these characteristics into consideration when he compiled the following eclectic collection of principles of adult learning.

1. When learners believe they can, will, or should change, learning is more likely to lead to measurable behavioral change.
2. Learning is more likely to improve performance when the learning experience is based upon skills and practices that are known to lead to high performance.
3. Learning is more likely to occur when there is unfreezing of prior attitudes, thoughts, and behavior patterns.
4. Learning will be enhanced if learners can observe and study examples of the desired behavior.
5. When learners identify, describe, and discuss the desired behavior in relation to job demands, corporate policies, and informal norms of the organization, learning is more likely to lead to measurable change back on the job.
6. The learning experience is more likely to influence behavior when learners perceive that the desired behavior is consistent with their ideal self-image.
7. The more frequently individuals practice the desired behavior, the more likely it is that new behavior patterns will be demonstrated back on the job.
8. When learners get feedback on how well they are doing, learning is more likely to lead to behavioral change.
9. Learning will be more effective in changing behavior when learners set concrete goals and develop written action plans as part of the learning process.
10. The learning experience will be enhanced if all parts of the whole person (cognitive, affective, and behavioral) are activated and integrated.
11. Learning is more likely to lead to behavioral change when the physical-social environment encourages and supports the emergence of new behavior patterns.

There is a great deal of evidence in the literature to support the assumption that the adult learners are unique and that they have special educational needs.

When one compares the components and assumptions of a mastery learning/teaching strategy with the assumptions of adult learning theory, the finding is, in the opinion of the writer, one of compatibility.

MASTERY LEARNING, STUDENT NEEDS, AND SIGNIFICANT RELATED STUDIES

In mastery learning, behavioristic and humanistic needs of the student are being met. Mastery learning theory suggests and recent studies by a number of authors (Biehler, 1970; Jones, 1975; Guskey, 1983; and Caponigri, 1982) support a positive correlation between students achieving levels of mastery using this type of learning. A brief summary of studies in support of mastery learning follows:

Biehler (1970) reported on a mastery learning strategy for teaching introductory undergraduate educational psychology. The purpose of the strategy was to reduce examination pressure and competition among students, to counteract the negative impact of poor early test performance on student's subsequent learning, to maintain a respectable level of student learning, and still assign grades within an A to F system.

The strategy seemed to be especially effective cognitively and affectively for students whose performance on the first course examination might ordinarily have led them to give up. These students found that they still had a chance to do well in the course if they were willing to spend additional review time and retake the test. Over ninety

percent of the students registered for the new course chose to learn under the mastery rather than the nonmastery option.

Kim (1969) examined the effectiveness of Bloom's strategies for mastery learning in Korea where classes are predominantly very large. The research sample consisted of 272 seventh graders. Half were assigned to the mastery learning group and half to the nonmastery learning group. The results indicate that seventy-four percent of the mastery group compared to only forty percent of the non-mastery group attained the mastery criterion of at least eighty percent correct answers on the summative achievement test. The data also reveal an interesting relationship between I.Q. and achievement under the mastery and nonmastery learning conditions. Thus, almost as many mastery students with below-average I.Q. as nonmastery students with above average I.Q. reached the criterion. Mastery learning was most effective for students with below average I.Q.

Jones (1975) reported on his mastery study that retake exams accounted for seventy-two percent of the student's earning A's at the end of unit one and that more of the students received A's on the first formative test on unit two. He felt that a genuine improvement had taken place by using a mastery strategy.

Okey (1977) conducted a project to produce materials that would foster favorable teacher attitudes toward the philosophy behind mastery learning. When the project was completed, it was found that the teachers put these strategies into active use.

The results indicated that teachers and interns acquired the mastery teaching skills and used them to the degree that pupils perceived differences in their teaching. Teacher attitudes towards the mastery teaching philosophy were generally positive, and students' attitudes and achievements were favorably altered because of their teachers' use of mastery teaching.

Fehlen (1976) conducted a mastery learning mathematics course for prospective elementary teachers. Mastery was set at ninety percent. The students were divided into three groups. The first group was allowed up to three retakes of a unit test if they did not achieve the ninety percent designated mastery level. The second group who did not achieve mastery level on a unit test were required to spend one hour receiving tutorial help on the objectives missed before they were allowed to retake the unit test. The third group of students were not allowed to retake tests or receive special tutorial help.

In general, the results of the study indicated that for the sample used in the investigation, a designated mastery level combined with the use of retesting or the use of tutorial help with retesting produced consistently higher mean achievement scores and higher mean attitude scores than when not using retesting. Results indicated that it did not matter whether tutorial help was provided or not. The crucial factor seemed to be the opportunity to retake tests in order to qualify for an A grade.

Deaton (1976) studied two sections of an undergraduate measurement course using both mastery and nonmastery strategies. Students in mastery sections were allowed to take up to 11 formative examinations with their

final grade resting solely on the criterion-based final exam. Students in nonmastery sections were administered 3 exams prior to the final exam and their final grade was norm-referenced from the 4 standardized test scores. The results of the study generally provide further support for the internal validity of selected components operating within a mastery learning instructional strategy.

Conclusion from Smith's (1982) study utilizing a mastery strategy along with the student choice and traditional methods of study affirms the notion that the mastery learning method clearly produces significantly higher gains in achievement than the student choice or traditional methods. This study did not provide evidence that mastery learning makes a difference on long-term retention.

Cook (1980) conducted a study to see if individual mastery learning is a more effective teaching strategy than lecture-discussion/role play for nurse-patient interaction constructs. Generally, the results suggest that teaching strategy had a greater influence than did internal focus of control and strong orientation to mental hygiene ideology-beliefs about mental illness on the nurse-patient interaction.

Guskey (1983) presents an account of an experiment with mastery learning in a course for sophomores and juniors. Fifty-five students were used in the mastery class and 142 in the nonmastery class. Students in mastery classes attained higher final examination scores, higher course grades, and were absent less often than students in classes taught by more traditional methods.

Broderick (1984) comments on this study:

> Of particular interest for those of us in public higher education is the authors conclusion that mastery learning not only improved the measurable performance of students in the course, it did so even for students whose prior knowledge of the subject was sharply limited and whose image of themselves as learners low: For faculty in public institutions whose students represent a wide range of preparation and motivation, such conclusions are encouraging (p 1).

Wentling (1973) conducted a mastery learning study in vocational education. One hundred and sixteen male high school students were distributed among six classes on "General Automobile Mechanics." A text on automobile ignition systems was revised and broken down into small units. All students were allowed to work at their own pace. The mastery groups were allowed to retake each unit test up to three times with specific review assigned, while the nonmastery group took each unit test and was graded. The mastery learning strategy precipitated superior mean achievement scores for both immediate achievement and retention. The knowledge of correctness of response raised the subject's attitude toward instruction, but the amount of time was greater for the mastery strategy.

Marshall (1977) writes about mastery theory and how it works in her classroom. Her work supports Bloom's mastery learning theory that most students can achieve at a high level of learning. She has seen the process work in her classroom.

Reese (1976) provides evidence that the mastery learning strategy used in teaching an experimental mastery group was more effective in teaching intermediate algebra to junior college students than was the nonmastery traditional, lecture method of instruction.

In most of the studies utilizing a mastery strategy, the student understands expected behaviors/outcomes at the beginning of a course and that correctives will be individualized to meet his/her needs. This expectation that learning is individualized and that most students have the potential to achieve is a good ego booster and fosters a positive concept. In support of individual instruction, Eurich (1962) summarized five basic principles of learning that are seemingly met by individualized instruction.

1. Whatever a student learns, he learns for himself- no one can learn it for him.

2. Each student learns at his own rate; and, for any age group, the variations in rates of learning are considerable.

3. A student learns more when each step is immediately strengthened or reinforced.

4. Full, rather than partial, mastery of each step makes total learning more meaningful.

5. When given responsibility for his own learning, the student is more highly motivated; he learns and retains more (p 23).

Thus, there is a positive correlation between mastery learning and student performance. If we, as educators, strive to enhance student performance and retentions of concepts, we may, in turn, reduce student attrition.

This concept is supported by Caponigri (1982) in his paper, The Impact of Mastery Learning in Performance and Attrition in which he gives the history of the beginning of a learning project at the City College of Chicago. He outlines all the formative phases and work involved. The analysis of the data demonstrated an increase in student performance and

in student retention. While the results were not overwhelmingly favorable, the trend was unmistakable. Caponigri (1982) demonstrated that Mastery Learning can be successful at the community college level in a variety of subject areas. Data collected in City College of Chicago's Mastery Learning Project support the following conclusions:

1. Students must fully participate in the mastery process in order to obtain maximum benefit from it.

2. Once individual teachers become more familiar with mastery techniques, their results will improve.

3. Mastery techniques have been shown to be effective in most subject areas.

4. We feel that continuing to encourage teachers to develop their own mastery techniques, rather than requiring a strict adherence to a prescribed mastery form will speed the adoption of mastery learning in the City College of Chicago.

5. Students in mastery classes often undergo a positive change in attitude toward themselves as learners and toward the subject (Caponigri, 1982, p 1077).

Thus, by utilizing mastery learning techniques, nursing educators have a means by which to enhance student retention of concepts and to reduce attrition. It is reasonable to assume that students in a nursing program, where the average grade is a C, need to improve their performance and that learning would be facilitated by a curriculum that increases self-concept by utilizing a mastery learning strategy.

IMPLICATIONS TO SUCCESSFUL IMPLEMENTATION

Mastery Learning theory suggests, and recent studies support, a positive correlation between students and achievement levels using this type of learning. Eighty percent of students across these projects attained levels of mastery ordinarily attained by twenty percent of all students. Further, when implemented properly, the variation in school achievement will decrease. Instead of a bell-shaped distribution for achievement, there would be a skewed distribution with most students' achievement clustering at the high end. Work on Mastery Learning theory began with the assumption that different amounts of time were needed to learn a particular learning task. However, research by Bloom (1968) and Carroll (1964) has shown that when learners are approximately equal in their cognitive and affective characteristics and when the quality of instruction is optimal, there is little difference in the amount of time needed to master a particular learning task. Since mastery strategies do reduce the variability in cognitive and affective characteristics for subsequent learning, if instruction is optimal at each stage of instruction, then each student may be helped to learn school subjects to the same degree or level of competence and even in approximately the same amount of time. Bloom (1976) argues:

> If humans are born equal or can become equal with regard to learning, the home and the school have responsibilities far greater than they have assumed in the past. If equality of learning is possible, then the selective function of schools must be largely abandoned in favor of the developmental functions which schools must increasingly serve (p 16).

There are many positive aspects of Mastery Learning that are appealing because so many of the needs of the adult learner can be addressed. For example, the writer agrees with Bloom (1982) that at least three of the following variables in school learning account for the differences in learning:

1. Cognitive entry behavior - The degree to which a student has learned the prerequisites will affect current learning. One should pre-test and take steps to remediate if there is a deficiency.

2. Affective entry characteristics - Motivation is the key to learning and that it is up to the teacher to motivate the student to learn by making the student feel like a respected human being.

3. Quality of instruction - Instruction should be individualized to meet the learners' needs. Instructors should be well qualified in their subject area, organized, and possess the ability to communicate with students to develop mutual, achievable goals (Bloom, 1982, p 4).

Course units should be set up in order of cognitive hierarchy because this hierarchy implies increasing complexity of behaviors and that learning of higher behavior level content is facilitated when there is mastery of lower behavior level content (Airasian, 1971, p 36). Hierarchies of related objectives can provide a map for planning instruction and supplementing curriculum materials to produce instruction compatible with teacher aims (Airasian, 1971, p 41).

The writer agrees with Bloom's hierarchical-cumulative learning model which places much of the emphasis for learning on the appropriateness of relevant stimuli in the form of teaching procedures,

selection of materials, and instructional strategies (Bloom, et al, 1971). Bloom's main concern, however, is the accurate assessment or evaluation of the learner's level of knowledge so that the appropriate teaching experiences may be presented with the optimum effect of use or application of the knowledge (1971, p 156). Piaget (1969) states that when a student is introduced to abstract concepts it is necessary for the student to begin with information that he/she already understands.

Student mastery of hierarchically ordered objectives of a unit before moving on to the next unit will help more retention of information and, hopefully, with retention of concepts. Wong (1978) states that difficulties and problems related to the transfer of learned principles to clinical practice are learning problems encountered by many nursing students. The problem seems to stem from having moved from the technical aspect of nurse's education to the teaching of principles without the emphasizing of integration. This is blatantly obvious with nursing students who may memorize well enough to maintain passing grades but cannot conceptualize how to help the patient.

Wisser (1974) agrees that this inability of students to transfer classroom information becomes a learning problem and begins to involve both the academic performance and the personal development of the student.

STATMENT OF IMPLICATION

The writer feels that there is evidence that all students, nursing students in particular, need to improve their capacity to retain and transfer information and concepts in order to deliver effective patient care. A mastery learning strategy may be one means to achieve this goal.

Nursing students must be able to transfer and to relate principles to nursing practice. "Students of service oriented programs must do more than simply absorb content and pass examinations" (Bregg, 1958, p 56). Therefore, it is apparent that if students are unable to transfer and to relate concepts and principles to nursing practice, they will not succeed in the nursing program. This will further increase an already high attrition rate and foster negative self-concept.

CHAPTER III

METHODOLOGY

There are three parts to the methodology of the study: (1) the design of the study; (2) the sampling procedure and collection of data; and (3) the instrumentation and data analysis.

DESIGN OF THE STUDY

The long-range purpose of this study is to provide the impetus for the selection of alternative teaching strategies that will facilitate learning and reduce attrition of students especially in an associate degree nursing program. These programs are traditionally highly structured and lecture oriented. In spite of selective admission policies, there is an attrition rate of one third (Levitt, 1974). This high attrition rate is costly in view of limited funds available for nursing education today. Students are lost to nursing education, which is time oriented and fast paced, because they have not mastered basic concepts. Faculty need to be more sensitive to the needs of the learner. A mastery approach would allow the students time to master basic concepts at their own pace prior to moving to more complex concepts.

The primary purpose of the study is to show that a mastery learning/teaching approach may facilitate learning and reduce attrition of students especially in associate degree nursing programs. There is evidence in the literature that this innovative teaching strategy may be compatible to the needs and characteristics of the adult learner: Knowles (1977) offers four assumptions on the adult learner: (1) difference in self-concept, (2) differences in

experience, (3) differences in readiness to learn, and (4) differences in orientation to learning.

In working with adult learners, one has to consider evidence in the literature by authors such as (Cross, 1981; Howe, 1977; Kidd, 1973; Knowles, 1977; and Tough, 1979) that the adult learner has different characteristics and needs than does the non-adult learner and should, therefore, be taught with the identified assumptions in mind. The literature review suggests that mastery learning serves as a means to reduce attrition, to individualize learning, and to promote better retention of course material.

The literature suggests that there is a compatibility between the components of a mastery learning theory and the characteristics and needs of the adult learner. This theory also suggests that the amount of learning that takes place depends on five factors (variables). These variables are summarized as follows:

1. Aptitude is the amount of time required by the learner to attain mastery of a learning task.

2. Quality of instruction is the degree to which the presentation, explanation, and ordering of elements of the task to be learned approach the optimum for a given learner.

3. The ability to understand instruction may be defined as the ability of the learner to understand the nature of the task to be learned and the procedures to be followed in learning it.

4. Perseverance is the time the learner is willing to spend in learning.

5. Time allowed for learning means that most, if not all, students can achieve mastery if they devote the amount of time needed to the learning.

The writer believes and the literature supports that these variables, when used to teach the adult learner, provide a positive learning experience.

The above leads to the assumption that while a mastery strategy may facilitate learning and reduce attrition of students in associate degree nursing programs, it is also congruent with the needs of the adult learner.

Thus the following research questions, designed to focus on student perceptions of the components of a mastery strategy, will also serve as foci for the questionnaire items from which the data will be analyzed:

1. Do student nurses perceive that current teaching strategies are adequate to meet learning needs?
2. Do student nurses perceive that learning aids (correctives) faciliatate learning?
3. Was there enough time to master basic concepts-
4. Did mastery of objectives in the first nursing course help with the second nursing course?
5. Is nursing faculty sensitive to learning needs?

These research questions were formulated by the researcher guided by data in the literature review and input from three members of the nursing faculty interested in mastery learning.

SAMPLING AND DATA COLLECTION

Initially, this research effort was intended, through the use of questionnaires, to examine the perceptions of one group of nursing students who had several of the components of mastery learning introduced into their nursing curriculum. However, it became clear that along with asking nursing students to speculate about something that, for the most

part, was a new experience, it would be advantageous to take this idea one step further and ask those students already involved in a mastery learning program for their perceptions.

A telephone survey of all of the Massachusetts Community College nursing programs was conducted. Only one school of nursing utilizing a total mastery curriculum was found. This school of nursing was at North Shore Community College and, because the director of this program was eager to participate in this study, it was decided to use two groups of nursing students for the study; one group of students from North Shore Community College who utilized a total mastery curriculum, the a-m group, and one group from Bristol Community College who did not utilize a total mastery curriculum, the s-m group.

The program at North Shore Community College is organized as a competency based, criterion referenced curriculum. This organization provides specific written learning requirements called competencies which may be achieved through student selection of several teaching alternatives such as: (1) directed self-study, (2) attending lectures, (3) attending seminars and discussions, and (4) use of the audio-visual/skills lab. Learning may be pursued according to student performance and at the student's own rate of learning.

The program at Bristol Community College is not competency based. Teaching is primarily lecture oriented with scheduled seminar offerings for all students. Teaching alternatives are not readily available, and there is a fixed time for learning.

The study asks 132 students, 70 s-m and 62 a-m, in the third semester of two four semester associate degree programs to participate in the study. It seemed logical to suppose that students who had been exposed to the curriculum for two semesters would then be able to offer opinions (perceptions) about their respective curriculum experiences.

INSTRUMENTATION AND ANALYSIS

To collect data for the study, the researcher developed a questionnaire guided by the components which affect a mastery strategy as uncovered in the research literature. Those components are listed as follows:

1. Quality of instruction
2. Correctives
3. Mastery of objectives
4. Diagnostic, nongraded, testing
5. Summative testing
6. Freedom from the fear of failure
7. Teacher sensitivity
8. Individualization of instruction
9. Self paced learning
10. Freedom from test anxiety

It has been stated by Borg and Gall (1971) that "probably no instrument has been used or abused as much in educational research as the questionnaire" (p 2410). They believe that the questionnaire dates back to Horace Mann who used it as a research tool in 1847. As discussed previously, the advantages in using the questionnaire as a survey

instrument in order to obtain responses from a large sample of respondents was the most efficient when one considered the issues of time, expense, and the scope of the study.

First, the pilot questionnaire was administered by the researcher to third semester nursing students enrolled in the evening section of the nursing program at Bristol Community College in July, 1984. Fourteen students, all members of the class, participated in this pilot study on a volunteer basis in their free time. The field test resulted in modification of some of the questionnaire items as follows:

1. Certain questions were unclear and, therefore, reworded.
2. Additional questions were added based on student suggestions.

There were 28 questions in the initial questionnaire. However, revisions were made as a result of input from meeting with faculty and members of the Data Analysis Group at the University of Massachusetts as well as the pilot study. In its final form, the questionnaire consisted of 38 items for the (s-m) some mastery Bristol Community College group (Appendix C) and 40 items for the (a-m) all mastery North Shore Community College group (Appendix D).

The researcher administered the questionnaire to the s-m group from Bristol Community College in October, 1984, and then, to the a-m group at North Shore Community College in December, 1984.

The questionnaire has two parts. Part I was designed to obtain demographic data on the respondents to be used for comparative analysis. Part II was designed to obtain student perceptions of the components of a mastery learning strategy.

The Questionnaire items include the following:

Part I: Demographic Data. The first part of the questionnaire was included to provide the demographic data on the respondents. Ten questions were developed providing information on the following:

1. Age.
2. Years out of high school.
3. Degrees held.
4. Name of degree, if any.
5. Credits prior to enrolling in the nursing course.
6. Licensed as an L.P.N.?
7. Grade received in the first nursing course.
8. Grade received in the second nursing course.
9. Need to work while attending.
10. How many hours worked during school.

This information was used to determine whether or not any of these data influence the student's perception of mastery learning as a learning strategy by comparing responses to the mastery learning questionnaire among the different demographic groups and then by comparing these data to each research question.

Part II: Mastery Learning. The second part of the survey instrument was designed to study student perceptions regarding the components of a mastery learning/teaching strategy. The items are statements that relate to the components of a mastery learning strategy as well as other components of the teaching/learning process. These items number 11-40 and may be found in appendix (C and D). Because this section asked students to answer according to their own perceptions, a Likert scale was used. Respondents were asked to answer questions using this rating scale:

Strongly Agree	(SA)	=	4 points
Agree	(A)	=	3 points
Disagree	(D)	=	2 points
Strongly Disagree	(SD)	=	1 point

Data on the research questions were tabulated and analyzed using selected items in terms of Chi square tests as well as frequencies, means, and standard deviations.

Tests for significance were part of the data analysis. Items number 11-40 (Appendix C and D) were designed to seek student perceptions in relation to the components of mastery learning. Thus, to determine their perception about the Quality of Instruction, questions were asked about teaching style, student learning style, variety of teaching methods, and quality of teaching. Student perceptions about Correctives required items such as the helpfulness of handouts, peer tutoring, audio-visual aids, and small group conferences. In order to determine perceptions about Mastery of Objectives, the questionnaire asked about ordering of

objectives from simple to complex, understanding basic concepts as a complement to learning, and the clarity of course objectives.

In order to determine if Summative Testing was perceived as desirable, there was an item on the fairness of summative testing. Student perceptions of Diagnostic, Nongraded Testing required items such as the helpfulness of nongraded tests. To determine student perceptions about Freedom from the fear of failure, questions needed to be asked about the first nursing course and the fear of failure and whether or not the nursing tests were more threatening than other tests.

In order to determine perception about Teacher Sensitivity, items were included such as: Did the instructor help to motivate the student?; Was the clinical instructor sensitive to the needs of the student?; Was the classroom instructor sensitive to the needs of the student? Student perceptions about Individualization of Instruction required items such as: Was there variety of teaching methods and materials to accommodate individual needs? Was extra time available to clarify difficult concepts? Did the instructor use a variety of teaching strategies to teach the theory content? To determine student perceptions about Self Paced Learning, items were included such as: Was the student able to learn theory at his/her own pace? Was extra time available to clarify difficult concepts? Given more time, could the student have earned an A grade? In order to determine student perceptions of Freedom from Test Anxiety, items were included such as: Were the nursing tests more threatening than tests in other courses? Was the first nursing course free of the fear of failure?

STATISTICAL TESTS

The Chi square test was used to determine the statistical differences between the groups on their demographic profile. These data were correlated to the mastery learning data. The T test was used to test averages of individual items that were combined to measure student perceptions of each research question; thus, the T test was utilized to compare the mean responses of the two groups. Also, the percentage of respondents answering (1) Strongly disagree, (2) Disagree, (3) Agree, and (4) Strongly agree were shown.

Selected items used to collect data on the research questions are listed below as they were numbered on the questionnaire.

Research Question 1

Do student nurses perceive that current teaching strategies are adequate to meet learning needs?

17. There was a variety of teaching methods and materials used to accommodate my individual needs.

22. The quality of instruction enabled me to meet objectives of the course.

32. The instructors utilize a variety of teaching strategies to teach theory content of the course.

Research Question 2

Do student nurses perceive that learning aids (correctives) facilitate learning?

11. Handouts have been instrumental to my learning.

12. Peer tutoring was instrumental to my learning.

14. Small group conferences were instrumental to my learning.

15. Audio-visual materials were instrumental to my learning.

Research Question 3

Was there enough time to master basic concepts?

20. I was able to learn the theory at my own pace.

23. Extra time was available to me to clarify difficult concepts.

37. Given more time, I could have earned an A.

Research Question 4

Did mastery of objectives in the first nursing course help with the second nursing course?

16. My understanding of the basic concepts on the first nursing course complemented my learning in the second nursing course.

19. The learning units in the first nursing course were designed to begin with simple concepts and to proceed to more complex concepts.

33. I felt comfortable and prepared for the second nursing course because I felt that I had mastered the objectives of the first nursing course.

35. I feel that I have mastered the content of the first nursing course.

Research Question 5

Is nursing faculty sensitive to your learning needs?

21. The desire of the instructor to help me motivated me to learn. (treated me as an OK person)

25. The grades that I earned were mainly the result of memorizing theory content.

27. My clinical instructor was sensitive to my needs.

28. The classroom instructors were sensitive to my needs

38. Assignments were always clear to me.

CHAPTER IV

DATA ANALYSIS

This chapter details the procedures followed in the collection and interpretation of data. Tables and figures are used to present findings in summary form in an effort to add clarity to the presentation of the results of the study.

COLLECTION OF DATA

To collect data for the study, the researcher developed a questionnaire guided by the components which affect a mastery strategy as uncovered in the research literature. Those components are listed as follows:

1. Quality of instruction
2. Correctives
3. Mastery of objectives
4. Diagnostic, nongraded testing
5. Summative testing
6. Freedom from the fear of failure
7. Teacher sensitivity
8. Individualization of instruction
9. Self paced learning
10. Freedom from test anxiety

It has been stated by Borg and Gall (1971) that "probably no instrument has been used or abused as much in educational research as the questionnaire" (p 2410). They believe that the questionnaire dates back to Horace Mann who used it as a research tool in 1847. The advantages in using the questionnaire as a survey instrument were discussed previously. When issues of time, expense, and scope of study are considered, the questionnaire is the most efficient survey instrument for obtaining responses from a large sample of respondents. It was, therefore, the choice for data collection for the study.

First, the pilot questionnaire was administered by the researcher to third semester nursing students enrolled in the evening section of the nursing program at Bristol Community College in July, 1984.

Fourteen students, all members of the class, participated in this pilot study on a volunteer basis in their free time. The field test resulted in modification of some of the questionnaire items as follows:

1. Certain questions were unclear and therefore, reworded.
2. Additional questions were added based on student suggestions.

There were 28 questions in the initial questionnaire. However, revisions were made as a result of input from meeting with faculty and members of the Data Analysis Group at the University of Massachusetts as well as the pilot study. In its final form, the questionnaire consisted of 28 items for the s-m Bristol Community College group (Appendix C) and 30 items for the a-m North Shore Community College group (Appendix D).

The questionnaire has two parts. Part I was designed to obtain demographic data on the respondents to be used for comparative analysis. Part II was designed to obtain student preceptions of the components of a mastery learning strategy.

The researcher administered the questionnaire to the s-m group from Bristol Community College in October, 1984 and to the a-m group at North Shore Community College in December, 1984.

QUESTIONNAIRE DATA

DEMOGRAPHIC DATA (Part I)

A Chi Square test was used to determine the statistical differences between the two groups on their demographic profile. Tables listing the number of students show the demographic data for both groups and how the two groups of student nurses compare with each other. The s-m group shows the responses of the students who were exposed to some, but not all, of the strategies of a mastery curriculum, and the a-m group shows the responses of the students who were taught by a mastery curriculum. These data will be followed by a brief summary. Significant differences at the .05 level between the two groups of students are found in tables 1, 7, and 8.

TABLE CODE

N - The number of students who responded to the question.

NR - The number of students who did not respond to the question.

In table 1 are found the ages of the students in both groups. Table 1 shows that 38 percent of the s-m group were between the ages of 18 and 21 compared to 16 percent of the mastery students in this age group. If one adheres to the definition of K. Patricia Cross that an adult learner is over 21, then these students were not considered to be adult learners. Sixty-one percent of the s-m group and 44 percent of the a-m group were between the ages of 18-25. This table also shows that 20 percent of the s-m group and 36 percent of the a-m group were between the ages of 31-40. Thus, the two groups of students are significantly different at the .05 level of significance in respect to age with the s-m group significantly younger than the a-m group.

TABLE 1

AGE

	18-21	22-25	26-30	31-38	39-49
some Mastery N = 70 Group	27 38.6%	16 22.9%	13 18.6%	11 15.7%	3 4.3%
all Mastery N = 61 Group	10 16.4%	17 27.9%	12 19.7%	15 24.6%	7 11.5%
NR = 1					

$X^2 = 9.52$

Significance .0493

In table 2 are found the number of years that the students worked. Table 2 shows that 72 percent of the s-m group and 52 percent of the a-m group worked 1-10 years and that 52 percent of the a-m group worked 1-10 years. This table also shows that 45 percent of the s-m group and 55 percent of the a-m group worked from 6 to 20 years. Since the a-m group is older, this may account for 13 percent of these students having worked more than 20 years compared to only 4 percent of the s-m group who worked more than 20 years. The groups were not significantly different in the number of years that they worked.

TABLE 2

NUMBER OF YEARS WORKED

	1-5 yrs.	6-10 yrs.	11-20 yrs.	20 + Over
some Mastery N = 70 Group	35 50%	15 21.4%	17 24.4%	3 4.3%
all Mastery N = 61 Group	20 32.8%	12 19.7%	21 34.4%	8 13.1%
NR = 1				

$X^2 = 6.53$

Significance .0885

In table 3 are found the degrees held by the students prior to enrolling in the nursing program. Table 3 shows that an average of 80 percent of the students in each group held no previous degrees and that an average of 20 percent of each group held previous degrees. The groups were not significantly different in degrees held prior to enrolling in the nursing program.

TABLE 3

DEGREE PRIOR TO ENROLLING IN THE NURSING PROGRAM

	YES	NO
some Mastery N = 70 Group	12 17.1%	58 82.9%
all Mastery N = 61 Group	14 23%	47 77%
NR = 1		

$X^2 = .37$

Significance .5407

In table 4 are found the types of degrees held by the students. 58 percent of the s-m students held Associate degrees and 42 percent held Baccalaureate degrees. The a-m group had 40 percent with Associate degrees and 53 percent with Baccalaureate degrees. Perhaps the older a-m group with more of the Baccalaureate degrees were forced to make a career change. The groups were not significantly different in respect to types of degrees held prior to enrolling in the nursing program.

TABLE 4

TYPE OF DEGREES

	AA	AS	BA	BS	OTHER
some Mastery N = 12 Group	4 33.3%	3 25%	2 16.7%	3 25%	0 0
all Mastery N = 14 Group	1 6.7%	5 33.3%	3 20%	5 33.3%	1 6.7%

$X^2 = 3.71$

Significance .4463

In table 5 are found the number of credits held by students prior to enrolling in the nursing program. This table shows that approximately 78 percent of the s-m and 50 percent of the a-m group had earned between 17-70 credits prior to enrolling in the nursing program. Thus, many of these students were determined to be experienced learners. The groups were not significantly different in earned credits.

TABLE 5

CREDITS PRIOR TO ENROLLING IN NURSING PROGRAM

	0-16	17-40	41-70	71 and over
some Mastery N = 58 Group	20 34.5%	25 43.1%	11 19%	2 3.4%
all Mastery N = 46 Group	16 34.8%	17 37%	6 13%	7 15.2%
NR = 28				

$X^2 = 4.89$

Significance .1795

In table 6 is found whether or not students held a nursing license prior to enrolling in the nursing program. This table shows that 84 percent of the s-m and 75 percent of the a-m group did not hold a nursing license prior to enrolling in the nursing program. The a-m group had 25 percent of its students with nursing license compared to only 15 percent of the s-m group holding licenses. This may be attributed to the fact that the a-m group is older and thus, had more opportunity to earn nursing licenses. The groups were not significantly different in nursing licenses held prior to enrolling in the nursing program.

TABLE 6

DID STUDENT HAVE A NURSING LICENSE (LPN) PRIOR TO ENROLLING IN THE NURSING PROGRAM?

	YES	NO
some Mastery N = 70 Group	11 15.7%	59 84.3%
all Mastery N = 60 Group	15 25%	45 75%
NR = 2		

$X^2 = 1.74$

Significance .1870

In table 7 are found the grades received by the students in the first nursing course. Table 7 shows that the scores of the s-m group were significantly different than those of the a-m group at the .01 level. Twenty three percent of the a-m group received an A grade while 5.8 percent of the s-m group received an A grade. An average of 66.5 percent of both groups received a B grade and 8 percent of the a-m group received an C grade while 30 percent of the s-m group receive a C grade. In mastery learning, more students are expected to achieve at the A level with fewer students scoring at the C level. The s-m students scored according to the traditional bell curve. These findings support evidence in the literature that more students in a mastery course will achieve an A grade than those students who are enrolled in a traditional course. These findings will explain the significant difference between the groups and grades received in the first nursing course.

TABLE 7

GRADES RECEIVED IN THE FIRST NURSING COURSE

	A	B	C
some Mastery N = 69 Group	4	44	21
	5.8%	63.8%	30.4%
all Mastery N = 52 Group	12	36	4
	23.1%	69.2%	7.7%
NR = 11			

In table 8 are found the grades received by the students in the second nursing course. Table 8 shows that 94 percent of the a-m group and 56.5 percent of the s-m group received an A or B grade. The a-m group had 6 percent of its students receive a C grade compared to 43.5 percent of the s-m students who received a C grade. These data may be interpreted as in table 7 except for the increasing number of C grades achieved by the s-m group and the increase in B grades achieved by the a-m group. This grade fluctuation may be expected when basic concepts are not mastered in the first nursing course. Learning may become more difficult as subsequent courses increase in complexity. Also it may be possible that if students memorize theory to achieve a grade then it may be more difficult for them to memorize complex concepts in subsequent courses. The two groups are significantly different at the .01 level in grades received in the second nursing course.

TABLE 8

GRADES RECEIVED IN THE SECOND NURSING COURSE

	A	B	C
some Mastery N = 69 Group	2 2.9%	37 53.6%	30 43.5%
all Mastery N = 50 Group	7 14%	40 80%	3 6%
NR = 13			

$X^2 = 22.52$

Significance (less than) .01
(.0000)

In table 9 are found the number of hours that both sets of students worked while attending school. Table 9 shows that 84 percent of the a-m group worked while attending school compared to 70 percent of the s-m group. The number of hours worked does not seem to account for the s-m group achieving lower grades although one cannot discount hours worked as a factor in students, in both groups, achieving lower grades. Also it is possible that the students who are younger, may not need to work as they may still be living at home. The groups were not significantly different in whether or not they worked while attending school.

TABLE 9

DID THE STUDENT WORK WHILE ATTENDING SCHOOL?

	YES	NO
some Mastery N = 70 Group	49 70%	21 30%
all Mastery N = 62 Group	52 83.9%	10 16%

$X^2 = 2.79$

Significance .0948

In table 10 are found the numbers of hours that students worked. Table 10 shows that 68 percent of both groups worked between 16-24 hours per week. 12 percent of the s-m and 9 percent of the a-m group worked 0-15 hours, and that 20 percent of the s-m and 22 percent of the a-m group worked 25-40 hours. With two thirds, of all students working 16-24 hours it seems that a small number of students do not work a great number of hours - perhaps 12 percent of the s-m and 9 percent of the a-m group are younger and are still living at home. The rationale for the a-m group needing to work more hours may be complex; for example: they may be older, have more responsibilities, have had to give up a job to come to school, or may be trying to adjust to a new life style, etc. The groups were not significantly different in respect to the number of hours worked.

TABLE 10

HOW MANY HOURS DID THE STUDENT WORK PER WEEK?

	0-15	16-24	25-40
some Mastery N = 50 Group	6 12%	34 68%	10 20%
all Mastery N = 53 Group	5 9.4%	36 67.9%	12 22.6%
NR = 29			

$X^2 = .24$

Significance .8857

QUESTIONNAIRE DATA - MASTERY PERCEPTION ITEMS (Part II)

To determine student perceptions to mastery learning in the questionnaire a Likert-type scale with four responses - strongly disagree, disagree, agree, and strongly agree was used for analyzing these data. In addition, a Chi Square test was performed to determine the significance of the differences between the responses of the two groups.

Questionnaire items are listed in Tables 11-40. Items that are statistically significant at the .01 and .05 level are shown in tables: 17, 20, 23, 27, 29, 30, 32, 33, 34, 35 and 36.

STUDENT RESPONSES TO SELECTED MASTERY LEARNING ITEMS 11-40

TABLE 11

STUDENT RESPONSES TO ITEM 11.
HANDOUTS HAVE BEEN INSTRUMENTAL TO MY LEARNING.

		SD	D	A	SA
some Mastery Group	N = 70	1 1	0 0	20 28.6%	49 70%
all Mastery Group	N = 62	0 0	1 1.6%	31 50%	30 48.4%

X^2 = 8.48 Significance 0.369

Table 11 shows that 98 percent of each group perceived handouts to be instrumented to learning. 70 percent of the s-m group were in strong agreement with this question compared to 48 percent of the a-m group. This may be due to the fact that this form of learning aid is heavily used by the faculty teaching the s-m students. One student from each group disagreed to this item.

TABLE 12

STUDENT RESPONSES TO ITEM 12.
PEER TUTORING WAS INSTRUMENTAL IN MY LEARNING.

	SD	D	A	SA
some Mastery Group N = 67	6 9%	31 46.3%	22 32.8%	8 11.9%
all Mastery Group N = 49	5 10.2%	13 26.5%	23 46.9%	8 16.3%
NR = 16				

$X^2 = 4.79$ Significance .1871

Table 12 shows that 45 percent of the s-m and 63 percent of the a-m group perceived peer tutoring to be instrumental to learning while 55.3 percent of the s-m and 36.7 percent of the a-m group disagreed that peer tutoring was helpful. This may be due to the fact that peer tutoring is part of a mastery curriculum and readily available while the s-m students rarely use this form of learning aid because peer tutors, although paid for by the school, are hard to find.

TABLE 13

STUDENT RESPONSES TO ITEM 13.
I DID NOT HAVE TIME TO TAKE ADVANTAGE OF PEER TUTORING.

	SD	D	A	SA
some Mastery Group N = 68	10 14.7%	19 27.9%	29 42.6%	10 14.7%
all Mastery Group N = 54	9 16.7%	23 42.6%	16 29.6%	6 11.1%
NR = 10				

$X^2 = 3.63$ Significance .3042

Table 13 shows that 57.3 percent of the s-m and 40.7 percent of the a-m group perceived that they did not have time to take advantage of peer tutoring while 42.6 percent of the s-m and 59.3 percent of the a-m group perceived that they had time for peer tutoring.

TABLE 14

STUDENT RESPONSES TO ITEM 14.
SMALL GROUP CONFERENCES WERE INSTRUMENTAL TO MY LEARNING.

	SD	D	A	SA
some Mastery N = 70 Group	2 2.9%	6 8.6%	41 58.6%	21 30%
all Mastery N = 62 Group	4 6.5%	8 12.9%	36 58.1%	14 22.6%

X^2 = 2.20 Significance .5319

Table 14 shows that while an average of 80 percent of both groups agree that small group conferences were instrumental to their learning, 11.5 percent of the s-m group and 19.4 percent of the a-m group disagree. This difference of opinion may be due to the fact that students have different learning styles and a number of students in each group did not find small group conferences useful in and of themselves.

TABLE 15

STUDENT RESPONSES TO ITEM 15.
AUDIO-VISUAL MATERIALS WERE INSTRUMENTAL TO MY LEARNING.

	SD	D	A	SA
some Mastery Mastery N = 69 Group	2 2.9%	15 21.7%	45 65.2%	7 10.1%
all Mastery N = 62 Group	0 0	8 12.9%	42 67.7%	12 19.4%
NR = 1				

X^2 = 5.19 Significance .1584

Table 15 shows that while 75 percent of the s-m and 87 percent of the a-m group perceived audio-visual materials as helpful to their learning, 24 percent of the s-m and 13 percent of the a-m group disagree. This difference of opinions may be due to a difference in learning styles. The s-m students are offered a number of audio-visual materials and, traditionally, only a few students make an effort to review these materials. Thus, these materials may not be perceived as helpful by the s-m students. Sometimes audio-visual materials are not of sufficient timeliness or quality to be useful.

TABLE 16

STUDENT RESPONSES TO ITEM 16.
MY UNDERSTANDING OF THE BASIC CONCEPTS IN THE FIRST NURSING COURSE COMPLIMENTED MY LEARNING IN THE SECOND NURSING COURSE.

	SD	D	A	SA
some Mastery N = 70 Group	1 1.4%	3 4.3%	31 44.3%	35 50%
all Mastery N = 62 Group	0 0%	2 3.2%	30 48.4%	30 48.4%

$X^2 = 1.12$ Significance .7722

Table 16 shows that 94 percent of the s-m and 96 percent of the a-m group felt that their understanding of basic concepts in the first nursing course complemented their learning in the second nursing course. It can be concluded that both groups generally agree that basic concepts learned in the first nursing course affects those in the second nursing course. However, 5 percent of the s-m group and 3 percent of the a-m group disagreed.

TABLE 17

STUDENT RESPONSES TO ITEM 17.
THERE WERE A VARIETY OF TEACHING METHODS AND MATERIALS USED TO ACCOMMODATE MY INDIVIDUAL NEEDS.

	SD	D	A	SA
some Mastery Group N = 69	1 1.4%	10 14.5%	44 63.8%	14 20.3%
all Mastery Group N = 62	0 0%	0 0%	23 37.1%	39 62.9%
NR = 1				

X^2 = 29.08 Significance less than .01 (.0000)

Table 17 shows that while 84 percent of the s-m and 100 percent of the a-m group agree that there were a variety of teaching methods and materials to accommodate individual needs, 16 percent of the s-m group did not feel this to be true. This significant difference at the .01 level may be due to the fact that a mastery curriculum, by design, utilizes various teaching/learning strategies to satisfy student individual learning styles while the traditional curriculum is a more simply structured curriculum that does not.

TABLE 18

STUDENT RESPONSES TO ITEM 18.
THE FIRST NURSING COURSE WAS FREE OF THE FEAR OF FAILING.

	SD	D	A	SA
some Mastery N = 70 Group	32 45.7%	22 31.4%	10 14.3%	6 8.6%
all Mastery N = 62 Group	33 53.2%	18 29.1%	8 12.9%	3 4.8%

X^2 = 1.15 Significance .7633

Table 18 shows that 77 percent of the s-m and 83 percent of the a-m group perceived that there was fear of failing the first nursing course while 23 percent of the s-m group and 17.7 percent of the a-m group disagreed. The a-m students may have experienced greater fear with failing the course because of summative testing. Formative tests, qiven freguently, are not counted for a grade while only one or two end of course, (summative tests) counted for a final grade. The s-m curriculum consisted of five quizzes and a final test for a cumulative grade.

TABLE 19

STUDENT RESPONSES TO ITEM 19.
THE LEARNING UNITS IN THE FIRST NURSING COURSE WERE DESIGNED TO BEGIN WITH SIMPLE CONCEPTS AND TO PROCEED TO MORE COMPLEX CONCEPTS

	SD	D	A	SA
some Mastery Group N = 69	1 1.4%	4 5.8%	43 62.3%	21 30.4%
all Mastery Group N = 62 NR = 1	0 0%	3 4.8%	36 58.1%	23 37.1%

X^2 = .22 Significance .6859

Table 19 shows that 93 percent of the s-m group and 95 percent of the a-m group agreed that the first nursing course was designed to begin with simple concepts and to proceed to more complex concepts, while 7 percent of the s-m and 4 percent of the a-m group disagreed.

TABLE 20

STUDENT RESPONSES TO ITEM 20.
I WAS ABLE TO LEARN THEORY AT MY OWN PACE.

	SD	D	A	SA
some Mastery N = 70 Group	6 8.6%	36 48.6%	29 41.4%	1 1.4%
all Mastery N = 62 Group	2 3.2%	11 17.7%	38 61.3%	11 17.7%

X^2 = 22.89 Significance (less than) .01 (.0000)

Table 20 shows that while 42 percent of the s-m and 80 percent of the a-m group agreed that they were able to learn theory at their own pace, 57 percent of the s-m and 20 percent of the a-m group disagree. There is a significant difference at the .01 level between the two groups. A mastery curriculum is designed for students to learn theory at their own pace, and a traditional curriculum does not allow for this individualization of learning. The s-m students who agree apparently found the pace of the traditional curriculum compatible to their needs.

TABLE 21

STUDENT RESPONSES TO ITEM 21.
THE DESIRE OF THE INSTRUCTOR TO HELP ME, MOTIVATED ME TO LEARN.
(treated me as an OK person)

	SD	D	A	SA
some Mastery N = 70 Group	2 2.9%	5 7.1%	39 55.7%	24 34.3%
all Mastery N = 62 Group	1 1.6%	2 3.2%	42 67.7%	17 27.4%

X^2 = 2.44 Significance .4193

Table 21 shows that while 90 percent of the s-m and 95 percent of the a-m group agree to the helpfulness of their instructors, 10 percent of the s-m and 5 percent of the a-m group disagree. Differences in teaching and learning styles may have contributed to these findings.

TABLE 22

STUDENT RESPONSES TO ITEM 22.
THE QUALITY OF INSTRUCTION ENABLED ME TO MEET OBJECTIVES OF THE COURSE

	SD	D	A	SA
some Master Group N = 68	0 0%	2 3.0%	51 74.6%	15 22.4%
all Mastery Group N = 62 NR = 2	2 3.2%	2 3.2%	41 66.1%	17 27.4%

$X^2 = 2.82$ Significance .4193

Table 22 shows that while 97 percent of the s-m and 93 percent of the a-m group agree that the quality of instruction helped them to meet course objectives, 3 percent of the s-m and 5 percent of the a-m group felt that this was not true for them. This may be due to individualized differences in teaching/learning style.

TABLE 23

STUDENT RESPONSES TO ITEM 23.
EXTRA TIME WAS AVAILABLE TO ME TO CLARIFY DIFFICULT CONCEPTS.

	SD	D	A	SA
some Mastery Group N = 70	5 7.1%	10 14.3%	47 67.1%	8 11.4%
all Master Group N = 62	0 0%	11 17.7%	36 58.1%	15 24.2%

$X^2 = 8.18$ Significance .0424

Table 23 shows that 78 percent of the s-m group and 82 percent of the a-m group agree that there was extra time to clarify difficult concepts, 21 percent of the s-m compared to 17 percent of the a-m group disagree. This significant difference at the .05 level may be attributed to a mastery curriculum design which allows students time to learn theory at their own pace while students in a traditional curriculum did not perceive the availability of extra time to clarify difficult concepts.

TABLE 24

STUDENT RESPONSES TO ITEM 24.
THE GRADES THAT I EARNED WERE DIRECTLY RELATED TO MY UNDERSTANDING OF THE CONCEPTS.

	SD	D	A	SA
some Mastery N = 70 Group	4 5.7%	19 27.1%	35 50%	12 17.1%
all Mastery N = 62 Group	3 4.8%	9 14.5%	38 61.3%	12 19.4%

$X^2 = 3.36$ Significance .3387

Table 24 shows that while 67 percent of the s-m and 80 percent of the a-m group felt that their grades were directly related to their understanding of basic concepts, 33 percent of the s-m and 19 percent of the a-m group disagree. Though the data do not tell us, the students who disagree, mainly 33 percent of the s-m group, may have memorized theory to pass their course or may have been low achievers and thus, assumed that they did not understand basic concepts based on their grade achievement.

TABLE 25

STUDENT RESPONSES TO ITEM 25.
THE GRADES THAT I EARNED WERE MAINLY THE RESULT OF MEMORIZING THEORY CONTENT.

	SD	D	A	SA
some Mastery N = 70 Group	13 18.3%	34 48.6%	21 30.0%	2 2.9%
all Mastery N = 62 Group	6 9.8%	42 68.9%	13 21.3%	0 0%

$X^2 = 6.71$ Significance .0815

Table 25 shows that 33 percent of the s-m and 21 percent of the a-m group agree that their grades were the result of memorizing theory while 66 percent of the s-m and 78 percent of the a-m group disagree. One possibility may be that more of the s-m group in a traditional curriculum memorize theory to attain their grades.

TABLE 26

STUDENT RESPONSES TO ITEM 26.
OUR COURSE OBJECTIVES WERE CLEAR TO ME.

	SD	D	A	SA
some Mastery N = 70 Group	0 0%	8 11.8%	53 77.9%	7 10.3%
all Mastery N = 62 Group	0 0%	5 8.1%	41 66.1%	16 25.8%

$X^2 = 5.48$ Significance .0645

Table 26 shows that 88 percent of the s-m and 92 percent of the a-m group felt that course objectives were clear. Twelve percent of the s-m group and 8 percent of the a-m group disagree to course objectives being clear. Students generally agree that course objectives were clear.

TABLE 27

STUDENT RESPONSES TO ITEM 27.
MY CLINICAL INSTRUCTOR WAS SENSITIVE TO MY NEEDS.

	SD	D	A	SA
some Mastery N = 70 Group	2 2.9%	10 14.3%	39 55.7%	19 27.1%
all Mastery N = 62 Group	2 3.2%	2 3.2%	29 46.8%	29 46.8%

X^2 = 8.43 Significance .0379

Table 27 shows that eighty-three percent of the s-m and 93 percent of the a-m group agree that the clinical instructor was sensitive to their needs. Seventeen percent of the s-m and 6 percent of the a-m group disagree. These responses may be attributed to individual student differences in teaching/learning styles or may be based on student perception of individualized instruction which is characteristic of a mastery curriculum and not characteristic to the traditional curriculum. There was a significant difference between the groups at the .05 level.

TABLE 28

STUDENT RESPONSES TO ITEM 28.
THE CLASSROOM INSTRUCTORS WERE SENSITIVE TO MY NEEDS.

	SD	D	A	SA
some Mastery N = 68 Group	1 1.5%	17 25%	45 66.2%	5 7.4%
all Mastery N = 62 Group	1 1.6%	10 16.1%	36 58.1%	15 24.2%
NR = 2				

$X^2 = 7.55$ Significance .0562

Table 28 shows that 73.6 percent of the s-m and 82 percent of the a-m students agree that the classroom instructor was sensitive to their needs while 26 percent of the s-m and 17 percent of the a-m group disagreed. The s-m group is subjected, mainly, to traditional classroom teaching; this may account for the greater number of students who disagree with the question. It may be difficult to determine instructor sensitivity to large numbers of students in the lecture hall.

TABLE 29

STUDENT RESPONSES TO ITEM 29.
I LEARN BEST BY THE LECTURE FORMAT.

	SD	D	A	SA
some Mastery N = 69 Group	1 1.4%	20 29%	42 60.9%	6 8.7%
all Mastery N = 62 Group	2 3.2%	9 14.5%	30 48.4%	21 33.9%
NR = 1				

X^2 = 14.50 Significance (less than) .01 (.0023)

Table 29 shows that 69.6 percent of the s-m and 82.3 percent of the a-m group learn best by the lecture format and that 30.4 percent of s-m and 17.7 percent of a-m students disagree to the helpfulness of this type of learning. The two groups are significantly different at the .01 level in their response to item 29. The students who disagree may learn by this method of instruction but do not necessarily prefer this instructional methodology.

TABLE 30

STUDENT RESPONSES TO ITEM 30.
I LEARN BEST BY SMALL GROUP DISCUSSIONS.

	SD	D	A	SA
some Mastery Group N = 69	1 1.4%	17 24.6%	35 50.7%	16 23.2%
all Mastery Group N = 62	3 4.8%	32 51.6%	22 35.5%	5 8.1%
NR = 1				

X^2 = 13.98 Significance (less than) .01 (.0029)

Table 30 shows that 74 percent of the s-m and only 43 percent of a-m group learn best by small group discussions. Twenty six percent of the s-m and 56 percent of the a-m group disagree. These findings indicate that the two groups are significantly different at the .01 level in their response to item 30. The students who disagree may learn by small group discussions but do not necessarily prefer this instructional methodology.

TABLE 31

STUDENT RESPONSES TO ITEM 31.
I LEARN BEST IN A NONGRADED LABORATORY SETTING WHERT I HAVE THE OPPORTUNITY TO PRACTICE AND RECEIVE REINFORCEMENT UNTIL OBJECTIVES ARE MET.

	SD	D	A	SA
some Mastery N = 69 Group	1 1.4%	8 11.6%	32 46.4%	28 40.6%
all Mastery N = 62 Group	0 0%	14 22.6%	31 50%	17 27.4%
NR = 1				

X^2 = 4.98 Significance .1732

Table 31 shows that 87 percent of the s-m and 77 percent of the a-m group agree that they learn best in a non-graded laboratory setting until objectives are met. Thirteen percent of the s-m and 22 percent of the a-m group disagree. More of the a-m group disagree that they learn best by this strategy, although they still learn as demonstrated by their high grade achievement. These findings may be attributed to differences in student learning style and to the helpfulness of a mastery strategy where the teaching style does not match the learning style yet the students earn higher grades than students in a traditional curriculum.

TABLE 32

STUDENT RESPONSES TO ITEM 32.
THE INSTRUCTORS UTILIZE A VARIETY OF TEACHING STRATEGIES TO TEACH THEORY CONTENT OF THE COURSE.

	SD	D	A	SA
some Mastery N = 70 Group	0 0%	10 14.3%	48 68.6%	12 17.1%
all Mastery N = 62 Group	0 0%	2 3.2%	43 69.4%	17 27.4%

$X^2 = 6.00$ Significance .0496

Table 32 shows that 85 percent of the s-m and 97 percent of the a-m students agree that a variety of teaching strategies were available to them. Fourteen percent of the s-m and 3 percent of the a-m group disagreed. There is a significant difference at the .05 level between the groups and may be due to the variety of teaching strategies available in a mastery curriculum compared to the limited variety of teaching strategies available in a structured curriculum. Also, in a mastery curriculum the student may be able to choose the teaching strategy that complements his/her learning style.

TABLE 33

STUDENT RESPONSES TO ITEM 33.
I FELT COMFORTABLE AND PREPARED FOR THE SECOND NURSING COURSE BECAUSE I FELT THAT I HAD MASTERED THE OBJECTIVES OF THE FIRST NURSING COURSE.

	SD	D	A	SA
some Mastery N = 70 Group	2 2.9%	16 22.8%	44 62.9%	8 11.4%
all Mastery N = 62 Group	0 0%	8 13.1%	36 59%	17 27.9%

$X^2 = 8.12$ Significance .0435

Table 33 shows that 74 percent of the s-m and 87 percent of the a-m group felt prepared for the second nursing course because they had mastered the objectives of the first nursing course. Twenty five percent of the s-m and 3 percent of the a-m group disagree. These findings may indicate that the s-m students who memorized content to achieve a grade in the first nursing course did not feel prepared for the second nursing course. There is a significant difference at the .05 level between the two groups. This difference of perception between the a-m and s-m group may be attributed to a mastery curriculum design that facilitates learning and mastery of objectives.

TABLE 34

STUDENT RESPONSES TO ITEM 34.
IT WOULD HAVE BEEN HELPFUL IF THE TESTS WERE NON GRADED AND USED ONLY TO DIAGNOSE MY LEARNING NEEDS.

	SD	D	A	SA
some Mastery N = 70 Group	8 11.4%	27 38.6%	20 28.6%	15 21.4%
all Mastery N = 62 Group	7 11.3%	36 58.1%	16 25.8%	3 4.8%

X^2 = 9.34 Significance .0250

Table 34 shows that 50 percent of the s-m and 30 percent of the a-m group perceived non-graded tests to diagnose learning needs as helpful. Fifty percent, of the s-m and 70 percent of the a-m group disagree. It is interesting to note that there is a significant difference at the .01 level between the groups on item 34. The a-m group, exposed to this teaching modality, did not find it particularly helpful, yet, they scored well on on their test. The s-m students may be saying that they would like this type of testing to help them to achieve higher grades.

TABLE 35

STUDENT RESPONSES TO ITEM 35.
I FEEL THAT I HAVE MASTERED THE CONTENT OF THE FIRST NURSING COURSE.

	SD	D	A	SA
some Mastery N = 70 Group	4 5.7%	20 28.5%	44 62.9%	2 2.9%
all Mastery N = 62 Group	0 0%	7 11.3%	42 67.7%	13 21.6%

$X^2 = 17.95$ Significance (less than) .01 (.0005)

Table 35 shows that 65 percent of the s-m and 89 percent of the a-m group felt that they had mastered the content of the first nursing course. These 2 groups are significantly different at the .01 level to item 35. 35 percent of the s-m group and 11 percent of the a-m group did not feel that they had mastered the content of the first nursing course. This difference may be attributed to better concept attainment with a mastery curriculum model. Students may have retained concepts because when they were allowed to learn at their own pace and because instructors were able to meet their individual needs.

TABLE 36

STUDENT RESPONSES TO ITEM 36.
COMPARED TO OTHER COURSES, THE NURSING TESTS WERE LESS THREATENING.

	SD	D	A	SA
some Mastery N = 70 Group	54 77.1%	11 15.7%	2 2.9%	3 4.3%
all Mastery N = 62 Group	26 41.9%	25 40.4%	10 16.1%	1 1.6%

X^2 = 21.17 Significance (less than) .01 (.0001)

Table 36 shows 93 percent of the s-m and 82 percent of the a-m group felt that nursing tests were more threatening than other tests. There is significant difference between the groups at the .01 level on item 36. A mastery strategy, using summative and formative testing may have contributed to decreasing test anxiety for 18 percent of the a-m students.

TABLE 37

STUDENT RESPONSES TO ITEM 37.
GIVEN MORE TIME, I COULD HAVE EARNED AN A.

	SD	D	A	SA
some Mastery N = 70 Group	2 2.9%	21 30%	28 40%	19 27.1%
all Mastery N = 62 Group	2 3.2%	14 22.6%	28 45.2%	18 29%

X^2 = .94

Significance .8144

Table 37 shows that 67 percent of the s-m and 75 percent of the a-m group felt that they could have earned an A given more time. There were a number of students, 27 percent of the s-m and 25 percent of the a-m group who did not feel that time would have helped them to earn an A. These findings may indicate that some of the students perceive that an A grade is unattainable in the nursing program because of the difficulty of the material or as the literature indicates the adult learner has first allegiance to family, home and then to school matters and is not interested in the A grade.

TABLE 38

STUDENT RESPONSES TO ITEM 38.
ASSIGNMENTS WERE ALWAYS CLEAR TO ME.

	SD	D	A	SA
some Mastery N = 70 Group	4 5.7%	25 35.7%	34 48.6%	7 10%
all Mastery N = 62 Group	2 3.2%	24 38.7%	30 48.4%	6 9.7%

X^2 = .53 Significance .9120

Table 38 shows that 58 percent of each group felt that assignments were clear. Approximately 42 percent of each group felt that assignments were not clear. These findings may indicate a need for faculty to investigate the reason for such a large number of students to question the clarity of assignments.

This ends the data analysis on mastery learning items comparing the two groups.

In the section which follows there is data on the perception of the a-m group on items 39 and 40.

DATA ON FORMATIVE AND SUMMATIVE TESTING

Questionnaire items 39 and 40, pertaining to formative and summative testing were to be answered by the all mastery group who were exposed to this testing modaltiy.

In Table 39 and 40 are found student perceptions about formative and summative testing.

TABLE 39

STUDENT RESPONSE TO FORMATIVE TESTING

I WAS ABLE TO LEARN BY DIAGNOSTIC TESTING

	SD	D	A	SA
N = 59	0	7	42	10
NR = 3	0%	11.9%	71.2%	16.9%

Eighty-eight percent of the a-m group generally agreed that diagnostic tests were helpful to their learning. A difference in learning style may account for the 12 percent who disagree.

TABLE 40

STUDENT RESPONSE TO SUMMATIVE TESTING

SUMMATIVE TESTS WERE FAIR AND ENHANCED MY LEARNING.

	SD	D	A	SA
N = 60	1	8	41	10
NR = 2	1.7%	13.8%	68.3%	16.7%

Eighty-five percent of the a-m group agreed that summative tests were helpful to their learning. A difference in learning style may account for the 15 percent who disagree.

The findings were of interest to the researcher because of the previous findings in items 30 and 31 where the statistics indicated that some of the students in this group learned best by the lecture format and some learned best by small group discussions. In spite of their different learning styles, the a-m group agreed to the helpfulness of formative and summative testing.

RESEARCH QUESTIONS

A t-test was performed to determine the significant differences between the responses of the two groups of students to the composite scores used to measure student perceptions of each research question. Research questions and results are listed in tables 41 - 46. Research questions 1, 3, and 4, show significant differences at the .05 level between the two groups. The scoring was determined by averaging student perception responses to a Likert scale of (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree

Research question 1.

Do student nurses perceive that current teaching strategies are adequate to meet learning needs.

17. There was a variety of teaching methods and materials used to accommodate my individual needs.

22. The quality of instruction enabled me to meet objectives of the course.

32. The instructors utilize a variety of teaching strategies to teach theory content of the course.

TABLE 41

RESPONSES OF GROUPS TO COMPOSITE ITEM SCORES AND RESEARCH QUESTION 1

	Mean	Standard Deviation	T Value	Probability
some Mastery Group	3.08	.390	-3.89	(less than) .01 (.000)
all Mastery Group	3.34	.402		

In table 41 there is evidence that the s-m group with a mean of 3.08 scored lower on the Likert scale that the current teaching strategies were adequate than the a-m group with mean response of 3.34. Although the s-m group had a variety of teaching strategies available to them, they did not have a choice of selecting a teaching strategy to complement their learning style. The a-m group, exposed to a mastery curriculum, had a variety of teaching strategies available to them and had the choice of selecting a teaching strategy to complement their learning style. This may have accounted for the significantly different response at the .01 level between the two group.

Research question 2.

Do student nurses perceive that learning aids (correctives) facilitate learning?

11. Handouts have been instrumental to my learning.

12. Peer Tutoring was instrumental to my learning.

14. Small Group Conferences were instrumental to my learning.

15 Audio-visual materials were instrumental to my learning.

TABLE 42

RESPONSES OF GROUPS TO COMPOSITE ITEM SCORES AND RESEARCH QUESTION 2

	Mean	Standard Deviation	T Value	Probability
some Mastery Group	3.03	.382	-.54	.593
all Mastery Group	3.07	.387		

In table 42, there is evidence that the s-m group with a mean of 3.03 and the a-m group with a mean of 3.07 generally agree that learning aids facilitate learning. There is no significant difference between the groups.

Research question 3.

Was there enough time to master basic concepts?

20. I was able to learn the theory at my own pace.

23. Extra time was available to me to clarity difficult concepts.

TABLE 43

RESPONSES OF GROUPS TO COMPOSITE ITEM SCORES AND RESEARCH QUESTION 3

	Mean	Standard Deviation	T Value	Probability
some Mastery Group	2.87	.385	-3.86	(less than) .01 (.000)
all Mastery Group	3.11	.348		

In table 43 there is evidence that the s-m group scored these items significantly different than the a-m group. The s-m group scored a mean of 2.87 while the a-m group scored a mean of 3.11. The s-m group, in a structured curriculum, were graded according to the amount of content mastered by semester end. The a-m group was allowed to learn theory at their own pace and were not required to master content by semester end. This may account for the significant difference in group response at the .01 level.

Research question 4.

Did mastery of objectives in the first nursing course help with the second nursing course?

16. My understanding of the basic concepts on the first nursing course complimented my learning in the second nursing course.

19. The learning units in the first nursing course were designed to begin with simple concepts and to proceed to more complex concepts.

33. I felt comfortable and prepared for the second nursing course because I felt that I had mastered the objectives of the first nursing course.

35. I feel that I have mastered the content of the first nursing course.

TABLE 44

RESPONSES OF GROUPS TO COMPOSITE ITEM SCORES AND RESEARCH QUESTION 4

	Mean	Standard Deviation	T Value	Probability
some Mastery Group	3.02	.441	-2.98	(less than) .01 (.003)
all Mastery Group	3.25	.430		

Table 44 shows that the s-m group was significantly different at the .01 level with a mean of 3.02 than the a-m group with a mean of 3.25. This may indicate that a mastery curriculum, where students learn theory at their own pace, is more conducive to mastery of basic concepts and that mastery of basic concepts is necessary to complement further learning. More of the a-m group perceived that they had mastered course content.

Research question 5.

Is nursing faculty sensitive to your learning needs?

21. The desire of the instructor to help me motivated me to learn. (treated me as an OK person).

27. My clinical instructor was sensitive to my needs.

28. The classroom instructors were sensitive to my needs.

TABLE 45

RESPONSES OF GROUPS TO COMPOSITE ITEM SCORES AND RESEARCH QUESTION 5

	Mean	Standard Deviation	T Value	Probability
some Mastery Group	2.95	.439	-1.70	.091
all Mastery Group	3.08	.476		

Table 45 shows that the s-m and a-m groups perceived that faculty had been sensitive to their needs. The groups were not significantly different in their responses.

In the section that follows, demographic data is compared by group to each research question.

DEMOGRAPHIC DATA COMPARED BY GROUP TO RESEARCH QUESTIONS

For these data, analysis of variance using a fixed effect ANOVA, as described in the manual, A Statistical Package for the Social Sciences (SPSS) was undertaken.

Each of the demographic variables was combined with each group to test if there was a significant difference in responses to the research question. These results were determined by scoring the number of respondents and their responses on the Likert scale. These data indicated that age was significant at the .05 level in students' perceptual responses to research question 1, 3, and 4. The results are listed in tables 46-55.

In table 46 are found the student ages compared for the s-m and a-m groups and the analysis of variance in table 47 shows if there is significant difference between the groups and research question 1: Do student nurses perceive that current teaching strategies are adequate to meet learning needs?

TABLE 46

RESEARCH QUESTION 1 COMPARED BY GROUP AND AGE

MEAN	3.21	Age:	18-21	22-25	26-30	31-38	39-49
some Mastery Group	3.08		2.91	3.26	3.15	3.18	2.94
all Mastery Group	3.26		3.30	3.39	3.44	3.36	3.19
		Average: Age Each Group	3.02	3.33	3.29	3.28	3.12

Table 46 shows that there is significant difference in the comparison of responses of the s-m group and the a-m group, by age, to research question 1. The analysis indicated that the s-m group had an average mean score of 3.08 and the a-m group had a mean score of 3.26. The youngest s-m group does not perceive teaching strategies to be adequate indicated by the lowest mean of 2.91. The oldest s-m group scored a 2.94. This may mean that the youngest and oldest s-m students need a variety of teaching strategies to meet their individual learning styles or that they have more learning needs. This is in direct contrast to the youngest age in the a-m group who had a mean score of 3.3 and the oldest age with a 3.19. This may indicate that a mastery curriculum with a variety of teaching strategies is conducive to the learning of all age groups.

TABLE 47

ANALYSIS OF VARIANCE TO RESEARCH QUESTION 1

SOURCE OF VARIATION	SUM OF SQUARES	MEAN SQUARE	F	P of F
GROUP	1.782	1.782	11.724	.01
AGE	1.551	.388	2.552	.043
GROUP BY AGE	.297	.074	.488	.744

The analysis of variance in table 47, shows that there is a significant difference at the .01 level in response by group and age to research question 1.

In table 48 are found the student ages compared for the s-m and a-m groups and the analysis of variance in table 49 shows if there is significant difference between the groups to research question 2: Do student nurses perceive that learning aids (correctives) facilitate learning?

TABLE 48

RESEARCH QUESTION 2 COMPARED BY GROUP AND AGE

MEAN	3.06	Age:	18-21	22-25	26--30	31-38	39-49
some Mastery Group	3.04		2.99	2.98	3.19	3.07	3.00
all Mastery Group	3.08		3.10	3.08	3.26	2.97	2.94
		Average: Age Each Group	3.02	3.03	3.26	3.01	2.96

Table 48 shows that all of the age groups generally perceived that correctives facilitate learning with an average mean of 3.04 and 3.08. Learning aids are perceived as helpful by both groups. However, the oldest s-m and a-m group did not agree that correctives facilitate learning with a group mean of 2.96.

TABLE 49

ANALYSIS OF VARIANCE TO RESEARCH QUESTION 2

SOURCE OF VARIATION	SUM OF SQUARES	MEAN SQUARE	F	
GROUP	.055	.055	.366	.546
AGE	.946	.237	1.584	.183
GROUP BY AGE	.203	.051	.340	.850

The analysis of variance in table 49 shows that there is no significant difference in response by group and age to research question 2.

In table 50 are found the student ages compared for the s-m and a-m groups; and the analysis of variance in table 51 shows any differences between the groups on research question 3: Was there enough time to master basic concepts?

TABLE 50

RESEARCH QUESTION 3 COMPARED BY GROUP AND AGE

MEAN	2.99	Age:	18-21	21-25	26-30	31-38	39-49
some Mastery Group	2.87		2.86	2.83	3.05	2.82	2.67
all Mastery Group	3.12		3.16	3.07	3.20	3.12	3.06
		Average: For Age Group	2.94	2.95	3.12	2.99	2.94

Table 50 shows that the s-m group were less positive about time with an average mean of 2.87. The a-m group felt that they had time to master basic concepts with an average mean of 3.12. This may mean that more of the a-m group, who were taught by a mastery curriculum and allowed to pursue theory at their own pace, felt that time was adequate to learn basic concepts. More students in the s-m group, exposed to a traditional, time structured curriculum, felt that more time was needed to master basic concepts.

TABLE 51

ANALYSIS OF VARIANCE TO RESEARCH QUESTION 3

SOURCE OF VARIATION	SUM OF SQUARES	MEAN SQUARE	F	P
GROUP	2.072	2.072	14.862	.001
AGE	.623	.156	1.118	.351
GROUP BY AGE	.203	.051	.340	.850

The analysis of variance in table 51 shows that there is significant difference at the .01 level by group and age to research question 3.

In table 52 are found the student ages compared for the s-m and a-m groups; the analysis of variance in table 53 shows any differences between the groups to research question

4: Did mastery of objectives in the first nursing course help with the second nursing course?

TABLE 52

RESEARCH QUESTION 4 COMPARED BY GROUP AND AGE

MEAN	3.13	Age:	18-21	22-25	26-30	31-38	39-49
some Mastery Group	3.03		2.91	3.06	3.19	3.08	3.00
all Mastery Group	3.26		3.22	3.25	3.23	3.38	3.11
		Average:	2.99	3.16	3.21	3.25	3.07

Table 52 shows that the s-m group was less favorable to the concept with a mean of 3.03 and the youngest group with a 2.91. The a-m group felt that mastery of objectives in the first nursing course helped with the second nursing course as shown by the mean of 3.26. The youngest of the s-m group had the lowest mean score when compared to the other age groups. The traditional curriculum used by the s-m group may not be meeting the learning style needs of these students. The difference may also be related to poor study habits or to the notion that mastery is not possible in a time structured curriculum. More teaching strategies need to be used to assist this group to attain mastery of subject matter.

TABLE 53

ANALYSIS OF VARIANCE TO RESEARCH QUESTION 4

SOURCE OF VARIATION	SUM OF SQUARES	MEAN SQUARE	F	
GROUP	1.286	1.286	6.632	.011
AGE	.835	.209	1.076	.371
GROUP BY AGE	.351	.088	.453	.770

The analysis of variance in table 53 shows that there is a significant difference at the .01 level when comparing group and age to research question 4.

In table 54 are found the student ages compared for the s-m and a-m groups and the analysis of variance in table 55 shows if there is significant difference between the groups to research question 5: Is nursing faculty sensitive to your learning needs?

TABLE 54

RESEARCH QUESTION 5 COMPARED BY GROUP AND AGE

MEAN	3.01	Age:	18-21	22-25	26-30	31-38	39-49
some Mastery Group	2.95		2.95	3.03	2.94	2.94	2.66
all Mastery Group	3.08		3.07	3.06	3.28	3.02	2.98
		Average:	2.98	3.04	3.10	2.99	2.88

Table 54 shows both groups to generally agree that faculty was sensitive to their needs. However, the lowest scores were attained by the youngest and oldest students in the s-m group and the oldest students in the a-m group.

TABLE 55

ANALYSIS OF VARIANCE TO RESEARCH QUESTION 5

SOURCE OF VARIATION	SUM OF SQUARES	MEAN SQUARE	F	
GROUP	.658	.658	3.045	.084
AGE	.522	.131	.604	.660
GROUP BY AGE	.441	.110	.510	.729

The analysis of variance in table 55 shows that there is no significant difference in response by group and age to research question 5.

OTHER DATA

The two groups were also compared with each demographic variable (Appendix A) to individual items on the questionnaire numbered 18, 24, 25, 26, 29, 30, 34, 36, 37, and 38. These items pertained to specific components of the mastery learning/teaching strategy listed in Appendices C and D and were analyzed using the chi square test. Most of the data were not significant at the .05 level and are not reported. Data was significantly different at the .05 level to items 26, Our course objectives were clear to me and the age variable; 29, I learn best by the lecture format and the credit variable; and item 30, I learn best by small group discussion and the age variable. These data are reported in tables 56, 57, and 58.

In table 56 are found the 18 - 21 year olds in both groups and their responses to questionnaire item 26. Our course objectives were clear to me.

Age 18-21

TABLE 56

COMPOSITE GROUP RESPONSE BY AGE (18-21) TO ITEM 26

	SD	D	A	SA
some Mastery Group N = 27		2 7.4%	25 92.6%	0 0%
all Mastery Group N = 10		2 20%	5 50%	3 30%

X^2 = -.1080 Significance (less than) .01 (.0045)

Table 56 shows that students' age (18-21) were significantly different than students in the other age groups in their response to questionnaire item 26. The s-m students felt more strongly that course objectives were clear than students, of the same age, in the a-m group. The objectives were clearer to the s-m group, yet they scored lower and did not master the objectives in the first nursing course. Perhaps more attention should be given to the learning needs of young students in a traditional curriculum who perceive course objectives to be clear, yet do not do well. These data are significantly different at the .05 level.

In table 57 are found students who had earned 41 -70 credits prior to enrolling in the nursing program and their responses to questionnaire item 29: I learn best by the lecture format.

Credits 41-70

TABLE 57

COMPOSITE GROUP RESPONSE BY CREDIT (41-70) TO ITEM 29

	SD	D	A	SA
some Mastery N = 25 Group		9 36%	15 60%	1 4%
all Mastery N = 17 Group		2 11.8%	9 52.9%	6 35.3%

X^2 = 8.30 Significance .0157

Table 57 shows that students who earned between (41-70) credits, 88 percent of the a-m group and 64 percent of the s-m group learned by the lecture method of instruction while 12 percent of the a-m group and 36 percent of the s-m group disagreed to learning best by this teaching strategy. These findings are interpreted to indicate a need to offer a variety of teaching strategies in a traditional curriculum which is often lecture oriented. The groups were significantly different in their response to item 29 at the .01 level.

In table 58 are found students who are 18 - 21 year old in the a-m and s-m group and their responses to questionnaire item 30: I learn best by small group discussions.

Age 18-21

TABLE 58

COMPOSITE GROUP RESPONSE BY AGE (18-21) TO ITEM 30

	SD	D	A	SA
some Mastery Group N = 27	1 3.7%	6 22.2%	15 55.6%	5 18.5%
all Mastery Group N = 10	0 0%	8 80%	1 10%	1 10%

X^2 = 10.63 Significance .0139

Table 58 shows that 74 percent of the s-m group perceived that they learned well by small group discussion and that 80 percent of the a-m group perceived that they did not learn well by small group discussion. These findings indicate a need to take student learning styles into consideration also that a mastery strategy is conducive to learning regardless of student learning style since the a-m students earned high grades.

This ends the section on data analysis. In the next chapter these findings are summarized and discussed along with recommendations and implications for students in general and nursing students in particular.

CHAPTER V

DISCUSSION OF FINDINGS, RECOMMENDATION AND SUGGESTIONS FOR FURTHER RESEARCH

OVERVIEW

This study was designed to survey two groups of sophomore nursing students, in two associate degree nursing programs, in the Commonwealth of Massachusetts. The survey determined student perceptions of mastery learning concepts and strategies as well as other perceptions related to the learning process. The two groups were identified as the some mastery (s-m) group and the all mastery (a-m) group. The s-m group used some, but not all, of the components of a mastery strategy in their curriculum design; the a-m group used a criterion-referenced total mastery curriculum design. These student perceptions may provide the impetus for acceptance of innovative teaching strategies to increase student performance by facilitating learning; and, in the long run such improvements in learning may lead to reduced attrition in nursing programs in particular and in education in general.

DESCRIPTION OF THE STUDY

To accomplish the purpose of the study, a two part questionnaire was developed. The first section of the questionnaire was to elicit demographic and other pertinent data on the 132 respondents; the second section of the questionnaire consisted of 28 items on mastery learning concepts and strategies drawn from the research of the literature.

Students indicated their perception to each item based on a four point Likert scale on (1) strongly disagree, (2) disagree, (3) agree and (4) strongly agree.

Composite scores of specific items were used to measure student perception to each research question, then a t-test was used to determine the significant difference, at the .05 level, between the groups.

To achieve the objectives of the study, five research questions were identified that related to mastery learning concepts and strategies; they were:

1. Do student nurses perceive that current teaching strategies are adequate to meet their learning needs?
2. Do student nurses perceive that learning aids (correctives) facilitate learning?
3. Was there enough time to master basic concepts?
4. Did mastery of objectives in the first nursing course help with the second nursing course?
5. Is nursing faculty sensitive to their learning needs?

DISCUSSION OF FINDINGS

Demographic data (questionnaire, Part I)

The investigator found no significant differences between the groups on the following demographic variables: previous degrees; number of years since high school graduation; did the student work while attending school; number of hours worked while attending school; and nursing license held prior to enrolling in the nursing program.

A significant relationship was found, however, between the groups and the demographic age variable. The s-m group was significantly

younger than the a-m group which may have contributed to the significantly different results between the groups when the research questions were compared by group and the age variable.

The relationship of the students age for each reseach question was determined, and significant differences at the .01 level were found in research questions 1, 3, and 4.

The research questions and results are described as follows:

Research Question 1. Do student nurses perceive that current teaching strategies are adequate to meet their learning needs?

The s-m group with mean scores, across the age groups, ranging from 2.91-3.26 seemed to perceive that teaching strategies were not adequate to meet their needs especially the youngest students who had the lowest mean of 2.91. The a-m group perceived teaching strategies to be adequate to meet their learning needs. They had mean scores ranging from 3.19-3.44 across the age groups. These findings may indicate that younger students, in a traditional curriculum, need a variety of teaching strategies to meet their needs. The a-m groups' youngest students had a mean of 3.33, suggesting that a mastery curriculum, with a variety of teaching strategies, is conducive to the learning of this age group.

Research Question 2. Do student nurses perceive that learning aids (correctives) facilitate learning?

Both groups generally perceived that learning aids (correctives) facilitated their learning. The groups were not significantly different in their response to this research question.

Research Question 3. Was there enough time to master basic concepts?

The s-m group did not feel that they had enough time to master basic concepts demonstrated by mean scores ranging from 2.67-3.05, across the age groups, with the youngest and oldest of their age groups achieving the lowest mean. The a-m group perceived that they had time to master basic concepts. They had mean scores of 3.16-3.20 across the age groups. These findings suggest that a mastery curriculum, where students advance at their own pace, is more conducive to mastery of concepts by all age groups and also suggests that a traditional curriculum, lacking in time flexibility, is not conducive to the youngest and oldest, previously identified, age groups.

Research Question 4. Did mastery of objectives in the first nursing course help with the second nursing course?

The s-m groups' mean responses ranged from 2.91-3.19, across the age groups; they generally perceived that mastery of objectives in the first course helped them with the second nursing course. However, the youngest of the s-m group scored the lowest mean, 2.91, suggesting that this group did not perceive that a traditional curriculum helped them to master objectives in the first nursing course. The a-m group perceived that there was sufficient mastery of objectives in the first nursing course to help with the second nursing course. They had mean scores ranging from 3.11-3.38 across the age groups.

Other variables, not addressed in this study, may affect the learning of young students: poor study habits; poor self-concept due to poor past accomplishments in other learning environments; low motivation; lack of goal orientation; and the notion that only a handful of students are capable of achieving mastery.

Research Question 5. Is nursing faculty sensitive to your needs?

Both groups perceived that faculty was sensitive to their learning needs. Although the findings were not significantly different between the groups for research question 5, the s-m group had lower mean scores across the age groups, suggesting that nursing faculty in a-m curriculum are perceived as more sensitive to student needs.

DEMOGRAPHIC DATA

A significant relationship at the .01 level was found between the groups and grades achieved in the first and second nursing course. The a-m groups achieved higher grades in both courses. These data are consistent with other research findings. For example, there is evidence in the literature by a number of authors (Block, 1974; Bloom, 1981; Caponigri, 1981; and Carroll, 1963) that mastery learning is one teaching/learning strategy that will increase student performance and reduce attrition.

Further examination of data in this study confirms those findings. In the first nursing course, 23 percent of the a-m group received an A grade, 69 percent received a B grade and 7 percent received a C grade. The s-m group had 6 percent of their students received an A grade, 64 percent received a B grade, and 30 percent received a C grade. In the second nursing course, the a-m group scored significantly higher than the s-m group at the .01 level. In the second nursing course, the investigator was interested to find that both groups generated fewer A

grades and more B grades while the s-m group generated more C grades. These data were interpreted to mean that mastery students do indeed achieve grades such as Bloom, (1982) refers to as an "ideal grade curve" described as looking "like a rotund, inverted U rather than the traditional bell curve." (p 68) These data suggest that grades may be harder to maintain once course complexity increases but that a mastery curriculum is still significant to achieving higher grades. Bloom (1982) supports the notion that a mastery strategy facilitates learning. He writes,

> Mastery learning helps the student improve his self-image by enabling him to achieve mastery of small portions of the subject. This will lead him on to further mastery and a more positive attitude toward learning in general. (p 37)

The demographic variables were also compared to each mastery item in Part II of the questionnaire. The results are described as follows:

There were significant differences at the .01 level between the two groups and the demographic variable age (18-21) to item 21: Course objectives were clear.

The youngest s-m group perceived more strongly than a-m group that course objectives were clear. This finding is interesting to note since this group earned more C grades and claimed that they did not master basic concepts in the first nursing course. This suggests that a traditional curriculum does not necessarily facilitate the mastering of objectives for these young students.

There were significant differences at the .01 level between the two groups and the demographic variable credit (41-70) to item 21: I learn

best by the lecture format. Of students who had earned 41-70 credits, the a-m group preferred to learn by the lecture format of instruction and th s-m group did not.

There were significant differences at the .01 level between the two groups and the demographic variable age (18-21) to item 30: I learn best by small group discussion. The youngest s-m groups perceptions were stronger than the youngest a-m group that small group discussion facilitated their learning.

Nursing students in the s-m group who achieved lower grades than the a-m group perceived that they had not mastered objectives of the first nursing course even though course objectives were very clear to them. These students enrolled in a curriculum of traditional design are likely to be instructed by the lecture format. Seventy percent of the s-m group perceived that they learned best by the lecture format. However, 30 percent disagreed.

Eighty-five percent of the a-m group perceived that they learned best by the lecture method. However, only 17.7 percent of the a-m group disagreed.

Nursing education curriculum designers should consider offering a variety of teaching modalities/strategies to meet the needs of this diverse student population.

This ends data comparison of Part I of the questionnaire.

Questionnaire Part II

These data compared the responses of the two groups of students to mastery items.

There were statistically significant differences at the .01 level between the a-m and s-m groups and research questions 1, 3, and 4. A Likert scale was used to tabulate the composite scores on items used to measure student perception of each research question. The results are described as follows:

Research Question 1. Do student nurses perceive that current teaching strategies are adequate to meet their learning needs?

The a-m group's perception that current teaching strategies were adequate is suggested by a mean of 3.34 when compared to a mean of 3.08 for the s-m group. The a-m group perceived that their curriculum offered a variety of teaching strategies to accommodate their individual needs. The s-m group did not feel that their curriculum offered a variety of teaching strategies to accommodate their individual needs.

The statistical differences at the .01 level to the research question were attributed, by the investigator, to the differences between a mastery and traditional curriculum. The availability of a variety of teaching methods and materials, selected by the a-m group, was viewed as quality instruction that enabled them to meet course objectives. Bloom (1982) agrees that a variety of teaching strategies are needed. He writes that there is

> still centrality of instruction for groups of learners. This instruction is likely to be very effective for some learners and relatively ineffective for some learners. (p 43)

Research Question 2. Do student nurses perceive that learning aids (correctives facilitate learning?

Both groups perceived that learning aids (correctives) facilitated their learning. The groups were not significantly different in their response to research question 2.

Research Question 3. Was there enough time to master basic concepts?

The a-m group scored significantly different than the s-m group at the .01 level. The a-m group perceived that there was enough time to master basic concepts is suggested by a mean of 3.11 when compared to a mean of 2.87 for the s-m group. The a-m group in a mastery curriculum were allowed to learn theory at their own pace; the s-m group in a traditional curriculum were forced to master course content by semester end.

Research Question 4. Did mastery of objectives in the first nursing course help with the second nursing course?

The a-m group had stronger perceptions that mastering objectives in the first nursing course helped them with the second. They scored significantly different at the .01 level with a mean of 3.25. The s-m group had a mean of 3.02.

These findings may suggest the mastery of basic concepts is more conducive when students learn at their own pace, such as in a mastery curriculum, and that mastery of basic concepts is necessary to complement further learning. The a-m group earned more A's and fewer C's than the s-m group in the first and second nursing course and this supports Bloom's (1966) assumption on the grading curve. More of the a-m group felt that they had mastered the concepts of the first nursing

course and that this was helpful to mastery of content in the second nursing course.

Research Question 5. Is nursing faculty sensitive to their learning needs?

Both groups generally agreed that faculty had been sensitive to their learning needs. The groups were not significantly different in their responses to research question 5. Nursing educators should take note of these findings when designing curriculum. All students perceived that learning aids (correctives) facilitated learning and these should continue to be used or added to curriculum design.

There were significant differences again between the groups and their preference for learning strategies, reinforcing the need to offer a variety of strategies to compliment the needs of this diverse student population.

Both groups perceived that faculty was sensitive to their needs. The groups were significantly different in their perception of mastering concepts. Both groups felt that there was enough time to master concepts, however 21 percent of the s-m group and 17 percent of the a-m group did not.

STUDENT PERCEPTIONS TO ITEMS RELATING TO CONCEPTS/STRATEGIES OF MASTERY LEARNING

These 28 items based on some of the components of a mastery strategy were drawn from the review of the literature and are as follows:

1. formative evaluation
2. learning aids (correctives)
3. small group sessions
4. diagnosis of learning needs

5. summative evaluation
6. peer tutoring

There were significant differences between the groups to 11 of the 28 mastery learning items. Responses between the groups for the following items were significantly different. The responses of the a-m group suggests that they perceive that a mastery strategy facilitates learning. Items of significance are as follows:

Item 17. There were a variety of teaching methods and materials used to accommodate my individual needs.

Eighty-four percent of the s-m group and the entire a-m group agreed to this item while 16 percent of the s-m group only disagreed. This significant difference at the .01 level, may be attributed to a mastery curriculum that, by design, utilizes various learning/teaching strategies to satisfy student individual learning styles while the traditional curriculum is a more simply structured curriculum.

Item 20. I was able to learn the theory at my own pace.

Eighty percent of the a-m and 42 percent of the s-m group agreed that they were able to learn the theory at their own pace. There is a significant difference between the two groups at the .01 level, which may be due in part, to the design differences between a mastery curriculum and a traditional curriculum. The s-m group who felt that they learned the theory apparently found the pace of the traditional curriculum compatible to their needs.

Item 23. Extra time was available to me to clarify difficult concepts.

Although both groups generally agreed that extra time was available to clarify difficult concepts, more of the s-m group disagreed. There was a significant difference between the two groups at the .04 level

which may be directly attributed to a mastery curriculum design that allows students to learn theory at their own pace.

Item 29. I learn best by the lecture format.

There were significant differences at the .01 level between the groups to item 29. While the majority, 70 percent of the s-m and 82 percent of the a-m group found the lecture method of instruction conducive to their learning, only 30 percent of the s-m group and 18 percent of the a-m group did not feel that they learned best by this method of instruction. These perceptions may explain the significant differences between the two groups.

Item 30. I learn best by small group discussions.

There were significant differences at the .01 level between the groups to item 30. Seventy four percent of the s-m and 43.6 percent of the a-m group found small group discussions conducive to their learning. However, 26 percent of the s-m and 56.4 percent of the a-m group reported that they did not learn best by this type of instruction. This may have contributed to the significant difference between the two groups.

Item 32. The instructors utilize a variety of teaching strategies to teach theory content of the course.

There were significant differences at the .05 level between the groups to item 32. An overwhelming number of students 85 percent of the s-m and 97 percent of the a-m group agreed that a variety of teaching strategies were available to them. However, 15 percent of the s-m and 3 percent of the a-m group disagreed. Thus contributing to the differences between the two groups.

Item 33. I felt comfortable and prepared for the second nursing course because I felt that I had mastered the objectives of the first nursing course.

There were significant differences at the .05 level between the groups to item 33. Again, a large number of students 74 percent of the s-m and 87 percent of the a-m group perceived that they had mastered the objectives of the first nursing course. At the same time 26 percent of the s-m and 13 percent of the a-m group felt that they had not mastered the objectives of the first nursing course and were not prepared for the second nursing course. This may account for the significant difference between the two groups.

Item 34. It would have been helpful if the tests were non graded and used only to diagnose my learning needs.

There were significant differences at the .05 level between the groups to item 34. Fifty percent of the s-m and 30 percent of the a-m group perceived this type of testing as helpful while 50 percent of the s-m and 70 percent of the a-m group disagree. The s-m group, not exposed to diagnostic testing, may want this type of approach while the a-m group with diagnostic testing, as part of their curriculum, may be saying that it clearly does not learn best by diagnostic, non-graded testing. In this study the a-m group was able to achieve high grades by this testing modality. This may account for the significant difference between the two groups.

Item 35. I feel that I have mastered the content of the first nursing course.

There were significant differences at the .01 level between the groups to item 35. Sixty-five percent of the s-m and 89 percent of the a-m group perceived that they had mastered the content of the first

nursing course while 35 percent of thi s-m and 11 percent of the a-m group did not. This study shows that more of the s-m group earned a C grade in the first nursing course thus showing a consistency between their grades and their answer to mastery of content. This may account for the significant difference between the groups. According to the literature students in a mastery curriculum, who are allowed to learn at their own pace, and who receive individualized instruction, earn higher grades than students in a traditional curriculum.

Item 36. Compared to other courses, the nursing tests were less threatening.

There were significant differences at the .01 level between the groups to item 36. Seven percent of the s-m group and 17 percent of the a-m group perceived that nursing tests were less threatening than other tests. This may suggest that a mastery strategy may reduce test anxiety and may explain the significant difference between the two groups.

In terms of curriculum development, nursing educators should consider that both groups were significantly different in their preferred learning modality. Students in the a-m group generally felt that their program facilitated their learning. They felt that a variety of teaching strategies were available to meet their individual needs and that they had time to learn and clarify basic concepts; they achieved high grades, felt that faculty had been sensitive to their needs and found summative and formative testing conducive to their learning. More of the students in the s-m group did not feel that their curriculum facilitated their learning. They did not feel that there

were a variety of teaching strategies to meet their individual needs. They did not feel that they had time to learn or clarify basic concepts. They did not master objectives.

Both student groups felt that learning aids (correctives) facilitated their learning and that course objectives were clear. Nursing educators who are designing curriculum should consider including those curricular aspects perceived to facilitate the learning of the a-m group into their curriculum design.

MASTERY ITEMS (39 and 40)

Answered only by the a-m group on Summative and Formative Testing

Only students in the a-m group were asked to respond to items 39 and 40. These items related to formative and summative testing which are part of a mastery curriculum design and not part of a traditional curriculum design. The responses of the a-m group supported both items: "I was able to learn by diagnostic testing" and "Summative tests were fair and enhanced my learning." Approximately 90 percent of the students favored this type of testing. The high grades earned by the a-m group suggests that this testing strategy facilitates learning.

STUDENTS WERE NOT SIGINFICANTLY DIFFERENT IN THEIR PERCEPTIONS TO THE FOLLOWING ITEMS

There were a number of ways in which students in both groups were alike. Students in both groups agreed with the following items:

11. Handouts have been instrumental to my learning.
12. Peer tutoring was instrumental to my learning.
13. I did not have time to take advantage of peer tutoring.

14. Small group conferences were instrumental to my learning.

15. Audio-visual materials were instrumental to my learning.

Both groups of students found learning aids (correctives) helpful to their learning. They did not have time to take advantage of peer tutoring.

Both groups of students found a variety of instruction to meet their individual needs and that their instructors were sensitive to their learning needs. Students in both groups were alike in their perception to the following items:

16. My understanding of the basic concepts on the first nursing course complimented my learning in the second nursing course.

21. The desire of the instructor to help me, motivated me to learn.

22. The quality of instruction enabled my to meet the course objectives.

Both groups of students felt that their grades were directly related to their understanding of concepts. However, 32 percent of the s-m group did not perceive their grades to be directly related to understanding concepts. Both groups of students generally did not feel that memorizing content influenced their grades directly. However, 33 percent of the s-m group felt that this theory grade was the result of memorizing content. Again, students in both groups were alike in their perceptions to the following items:

24. The grades that I earned were directly related to my understanding of the concepts.

25. The grades that I earned were mainly the result of memorizing theory content.

Both groups of students felt that course objectives were clear and that non graded laboratory practices were conducive to their learning. Both groups of students felt that they could have earned an A grade if there had been more time. However, 33 percent of the s-m group and 26 percent of the group felt that they could not earn an A grade if they were given more time. Students in both groups were alike in their perceptions to the following items:

26. Our course objectives were clear to me.

21. I learn best in non graded laboratory setting where I have the opportunity to practice and receive reinforcement until objectives are met.

37. Given more time, I could have earned an A.

SUMMARY

The two groups of students were alike in their perceptions that learning aids (correctives) facilitated their learning. Although they perceived the notion of peer tutoring as helpful, they did not have time to take advantage of that form of learning aid (correctives). Both groups of students perceived that their grades were related to their understanding of basic concepts. They perceived their course objectives to be clear and to generally support the notion of non graded laboratory settings.

RECOMMENDATIONS

The following recommendations are not all-inclusive. They are offered as possibilities for making a difference in nursing student performance and thus, perhaps, reducing attrition of students in general and nursing students in particular in associate degree programs in the

Commonwealth of Massachusetts. These recommendations could be implemented by accomplishing the following:

Nursing and other community college faculty could:

I. Design a competency-based, criterion-referenced curriculum based on a mastery model. Hayenga (1980) states that,

> Americans are particularly responsive to the connotations of competence-based education because of their esteem for competence: the notion of innate individual competence, a valuing of each individual rights to achieve, and a sense that all persons should have equality of access are ideas and values that have shaped this nations most complex social policies, including education. (p 41)

The following are suggestions for this model:

A. offering a variety of teaching strategies to complement individual student needs.

The statistics in this study show that students learn best by different teaching strategies and thus a variety of these strategies are needed.

B. allowing students to learn at their own pace.

Data in this study show that students who were able to learn at their own pace achieved higher grades. The investigator feels that this may be accomplished by designing learning modules, with specific objectives, which students could master at their own pace.

C. sharing course objectives with students and encouraging student input into the formulation of objectives on which they will be evaluated, Jones (1975) states that,

> It is important to tell the students how the instructional material is organized, how it will be presented, and how their performance will be evaluated. (p 2)

D. organizing units of instruction into a conceptual hierarchy of objectives based on Bloom's (1956) Taxonomy of Educational Objectives where he writes,

> The cognitive domain is concerned with the intellect. This domain addresses the hierarchical categories of student behaviors with behaviors in each category of the taxonomy requiring mastery of related behaviors in proceeding categories. (p 6)

These are a few of the mastery strategies that may allow more options and indeed more success for the diverse student population in the community college system.

II. Construct brief, diagnostic (formative) tests that are not graded and are used to determine whether or not students have mastered unit objectives. If there is non-mastery of objectives, the faculty should facilitate student learning by providing a variety of correctives that will clarify content. These brief, diagnostic tests should be given throughout the course. Bloom (1973) supports this approach when he states that,

> frequent formative evaluation tests pace the learning of students and help motivate them to put forth the necessary effort at the appropriate time. The appropriate use of these tests helps to insure that each set of learning task is thoroughly mastered before subsequent learning tasks are started. (p 13)

Data in this study show that both groups of students experienced more test anxiety with nursing tests than with tests in other courses. The investigator attributes this anxiety to the complexity of the

subject matter as well as the involvement of human beings and elements of responsibility and accountability. Perhaps, repeated use of diagnostic (formative) tests for students in a traditional curriculum to determine mastery of objectives will help to reduce test anxiety when the graded (summative) tests are administered. In addition, the a-m group may need to experience more summative tests, during a course, to reduce their test anxiety.

III. Design a flexible curriculum where students can learn at their own pace. The semester may need to be open ended with student progress dependent upon meeting objectives. Instructors as resource personnel, should diagnose student needs and suggest correctives to assist students in their mastery of objectives. Carroll (1963) postulates,

> that there are no "good" or "bad" students, but merely students who learn at different rates of speed and that the degree of learning is directly proportional to the time spent in learning and inversely proportional to the time needed to learn. (p 16)

IV. Explore the extent to which the use of a mastery model, criterion-referenced, curriculum contributed to the a-m groups' non adherence to the "normal" grading curve. Bloom (1982) summarized the normal grading curve as follows,

> the normal grading curve presupposes that when grades are distributed in a "normal" fashion that a small percentage of students will receive a grade of A and that an equal number of students will "fail". Students are, traditionally, classified in about five levels of performance with grades assigned in some relative fashion and that most educators proceed in their teaching as though only a minority of students should be able to learn what they have to teach. (p 14)

Mastery literature states that if education is a purposeful activity then educators should strive to have students learn what is taught. Success will be evident if the grade achievement does not approximate "normal" grade distribution but rather, clusters at the high end of the scale.

V. Explore the use of a mastery curriculum as a means to address learning needs and to reduce attrition of this diverse student population. "What ought to concern educators is not the racial and socioeconomic characteristics of the New Students" writes K. Patricia Cross (1973) "but rather the pervasive experience of New Students with failure in the American School system." (p 32) These students lack the proper prerequisites, discipline and self confidence required to be successful in a community college program. They have not been challenged to learn or they may have been convinced by their repeated failures that they cannot learn; they need to experience success by beginning with courses designed for mastery since this teaching strategy encourages success. Shabat (1981) summarized that,

> Public community colleges are failing the new, highly diversified type of student and the failure shows up in a tremendous attrition rate. Many of these students experience frustration and a sense of failure. Most are adults; they make a commitment, sacrifice and come to college to get their chance at post-secondary education. However, they haven't been getting a fair chance. If we are not doing the job we will not get the support of the public. If we don't deserve these students, someone will come along engenious enough to create another institution that will. (p 3)

IMPLICATIONS FOR OTHERS DESIGNING NURSING PROGRAMS

Both of the groups surveyed found that learning aids (correctives) facilitated their learning suggesting that correctives should be included in the curriculum design. The students generally liked handouts, small group conferences and audio-visual aids.

The a-m group supported the concept of summative and formative testing and both groups supported the notion of non-graded laboratory practice until objectives were met. This suggests that students perceive this to be a good learning mode and it should be included in a curriculum design. There was evidence, in this study, to suggest that summative and formative testing reduced test anxiety for several students.

The significant number of students in the a-m group perceived that they received educational benefits from an a-m curriculum. This suggests that a mastery strategy facilitates learning, enhances student education, and should be implemented when creating a new curriculum design.

A new curriculum design should offer a variety of teaching strategies determined necessary by both groups of students in this study to facilitate learning and to meet the needs of individual learning styles.

SUGGESTIONS FOR FURTHER RESEARCH

Researchers might build on this study in a number of ways. Among them:

Identify programs with the high attrition rates and work with the faculty to design a competency based curriculum. A longitudinal study could determine if attrition was reduced over time with a competency based program.

Survey faculty regarding their perceptions of a mastery strategy in order to evaluate their understanding of cognitive hierarchies in learning. Assist faculty to develop course objectives in the order of cognitive hierarchy. A longitudinal study could determine if learning is facilitated. Data might include an examination of student grades once concepts are learned in a simple to complex manner.

Future studies could determine if over a period of time a mastery strategy facilitates learning by designing a study which compares a control and an experimental group.

Determine if those programs with an all mastery curriculum do reduce attrition by looking at the State Board scores. A longitudinal study could determine if attrition was reduced over time with a competency based curriculum.

SUMMARY

The purpose of this study was to determine student perceptions of the concepts and strategies of a mastery learning/teaching strategy to determine if this innovative teaching strategy increases student performance by facilitating learning. The evidence in this study

supports the findings in the literature that a mastery strategy facilitates learning.

The students in a mastery curriculum were more positive than the students in a traditional curriculum about their learning experiences. The writings of Rossing (1977) supports these finding. He writes,

> Student motivation and confidence are created and maintained by educational approaches that provide learners with successful learning experiences. (p 68)

The students in a mastery curriculum achieved higher grades than students in a traditional curriculum. The writings of Bloom (1976) supports these finding. He concludes,

> under the appropriate learning conditions virtually all students can learn well what the schools have to teach. (p 2)

The students in a mastery curriculum were more positive than students in a traditional curriculum about receiving individual attention to meet their learning needs. Guskey (1982) has written,

> mastery learning helps resolve a major learning problem by pinpointing the kind of assistance most likely to raise the level of achievement of the students. (p 40)

The students in this study had a variety of learning styles. Although the majority of both groups generally preferred the lecture method, more of the traditional group preferred small group discussions. Kilody (1975) found the traditional lecture method to be an inefficient learning technique for all except the highest level of students and that lecture methods of teaching must be balanced by more concrete activities where students can engage in manipulation of materials and verbal explanation among themselves, He suggests,

> the utilization of a variety of instructional methodologies would provide a number of options for an increasingly diverse population of students entering nursing programs. (p 92)

Thus we see agreement here that a variety of instructional methodologies may indeed facilitate learning.

The students in a mastery curriculum were more in agreement that they had mastered basic concepts than students in a traditional curriculum. They felt that they had enough time to learn basic concepts; they felt that their mastery of concepts in the first nursing course helped them with the second nursing course. Carroll (1963) supports the benefits of a mastery curriculum. Bloom (1982) agrees with Carroll and writes,

> the strategy for learning and the amount of time needed by the learner for mastery must vary according to each student's needs. (p 188)

And, in the current study, we find that students in a traditional nursing program are asking to learn at their own pace while students in a mastery nursing program perceive that they are indeed able to learn at their own pace.

This study explored the perception of students to a mastery strategy to determine if this innovative teaching/learning strategy facilitated learning, and may in the long term reduce student attrition. These data support the finding of other mastery learning studies; students in the a-m group learned more, and more of the a-m group learned well what the teacher set out to teach. These results present an optimistic perspective for improving the quality of instruction and student learning in college courses, not only in nursing education

courses, but in other areas as well. Longitudinal studies will need to be done to determine if attrition rates are affected.

In closing, it is interesting to note that the findings in this study are consistent with the bulk of existing literature. The findings suggest that a mastery strategy facilitates learning and supports Bloom's (1976) suggestion that: "under the appropriate learning conditions virtually all students can learn what the schools have to offer." (p 2) Bloom's statement supports the need for nursing students to do more than pass professional courses, they must become masters of content. No doubt their patients will find comfort in the knowledge that such nurses are masters of their profession.

APPENDIX A

STUDENT CONSENT FORM

I, Marie Marshall, am conducting a research study in order to fulfill the requirements for the Doctor of Education Degree at the University of Massachusetts at Amherst.

This study will involve the use of a researcher prepared questionnaire. You will be asked to respond to items based on a scored likert-like scale of strongly-agree to strongly-disagree with 4 representing strongly- agree (SA), 3 representing agree (A), 2 disagree (D), and 1 strongly-disagree (SD). This questionnaire will take about twenty minutes. There are no good or bad scores. These questions relate to teaching learning strategies in your first two nursing courses.

All data will be confidential and student respondent will remain anonymous. A number code will be assigned to each respondent. Only the assigned numbers will be used when compiling the statistical data for analysis. No members of the faculty will be privileged to this information until the final analysis is complete and numerically coded. Any student participating in the study will be given a copy of the statistical report upon request.

Your grade will not be influenced in any way by your willingness to participate in this study.

All second year nursing students are being asked to participate in this questionnaire which is seeking information about first year course content.

This questionnaire is used as a means of facilitating the teaching-learning process and will be of value in assessing student perception of innovative teaching-learning strategies that may enhance student learning and reduce student attrition.

Information obtained from this questionnaire may be used for the following purposes:

1. Publication in my doctoral dissertation.
2. Publication in educational journals.
3. Faculty and staff workshops.
4. To provide information to participants of the study.
5. Potential curriculum revisions.

You may withdrew from participating at any time. If you choose to participate, I thank you.

I have read the statements above and consent to participate.

Signature:_____ Date:_____

Marie Marshall, Fist year team member

APPENDIX B

Questionnaire

Demographic data (base line data)

Please circle your best answers to the following questions.

1. Age

   a. 18 - 21
   b. 22 - 25
   c. 26 - 30
   d. 31 - 38
   e. over 39

2. How many years have you been out of high school?

   a. 1 - 5
   b. 6 - 10
   c. 11 - 20
   d. 21 and over

3. Do you have a degree at present?

   a. Yes
   b. No

4. If your answer to number 3 was yes, what is the degree?

   a. Associate of Arts _____

   b. Associate of Science _____

   c. Bachelor of Arts _____

   d. Bachelor of Science _____

   e. Other (specify) _____

5. If your answer to number 3 was no, how many credits did you have prior to enrolling in the nursing program?

   a. 0 - 16
   b. 17 - 40
   c. 41 - 70
   d. 71 and over

6. Are you a Licensed Practical Nurse?

   a. Yes
   b. No

7. Grade that you received in Nursing 11

   a. A
   b. B
   c. C

8. Grade that you received in Nursing 12

   a. A
   b. B
   c. C

9. Did you work during school?

   a. Yes
   b. No

10. If your answer to number 9 was yes, how many hours per week?

   a. 0 - 15
   b. 16 - 24
   c. 25 - 40

APPENDIX C

Questionnaire

Part Two (distributed to the non-mastery group)

The questions that follow describe a wide range of opinions related to a variety of teaching/learning strategies that may or may not have been included in the first nursing course.

To what degree do you agree or disagree with each statement below?

Strongly Agree	SA	4
Agree	A	3
Disagree	D	2
Strongly Disagree	SD	1

Circle the number of your choice	SA 4	A 3	D 2	SD 1
11. Handouts have been instrumental to my learning.	4	3	2	1
12. Peer tutoring was instrumental to my learning.	4	3	2	1
13. I did not have time to take advantage of peer tutoring.	4	3	2	1
14. Small group conferences were instrumental to my learning.	4	3	2	1
15. Audio-visual materials were instrumental to my learning.	4	3	2	1
16. My understanding of the basic concepts on the first nursing course complimented my learning in the second nursing course.	4	3	2	1
17. There was a variety of teaching methods and materials used to accommodate my individual needs.	4	3	2	1

		SD 4	A 3	D 2	SD 1
18.	The first nursing course was free of the fear of failing.	4	3	2	1
19.	The learning units in the first nursing course were designed to begin with simple concepts and to proceed to more complex concepts.	4	3	2	1
20.	I was able to learn the theory at my own pace.	4	3	2	1
21.	The desire of the instructor to help me motivated me to learn. (treated me as an OK person)	4	3	2	1
22.	The quality of instruction enabled me to meet objectives of the course.	4	3	2	1
23.	Extra time was available to me to clarify difficult concepts.	4	3	2	1
24.	The grades that I earned were directly related to my understanding of the concepts.	4	3	2	1
25.	The grades that I earned were mainly the result of memorizing content.	4	3	2	1
26.	Our course objectives were clear to me.	4	3	2	1
27.	My clinical instructor was sensitive to my needs.	4	3	2	1
28.	The classroom instructors were sensitive to my needs.	4	3	2	1
29.	I learn best by the lecture format.	4	3	2	1
30.	I learn best by small group discussions.	4	3	2	1
31.	I learn best in nongraded laboratory setting where I have the opportunity to practice and receive reinforcement until objectives are met.	4	3	2	1

		SA 4	A 3	D 2	SD 1
32.	The instructors utilize a variety of teaching strategies to teach theory content of the course.	4	3	2	1
33.	I felt comfortable and prepared for the second nursing course because I felt that I had mastered the objectives of the first nursing course.	4	3	2	1
34.	It would have been helpful if the tests were non graded and used only to diagnose my learning needs.	4	3	2	1
35.	I feel that I have mastered the content of the first nursing course.	4	3	2	1
36.	Compared to other courses, the nursing tests were less threatening.	4	3	2	1
37.	Given more time, I could have earned an A.	4	3	2	1
38.	Assignments were always clear to me.	4	3	2	1

Please share the results of the questionnaire with me. _____

APPENDIX D

Questionnaire

Part Two (distributed to the mastery group)

The questions that follow describe a wide range of opinions related to a variety of teaching/learning strategies that may or may not have been included in the first nursing course.

Circle the number of your choice	SA 4	A 3	D 2	SD 1
11. Handouts have been instrumental to my learning.	4	3	2	1
12. Peer tutoring was instrumental to my learning.	4	3	2	1
13. I did not have time to take advantage of peer tutoring.	4	3	2	1
14. Small group conferences were instrumental to my learning.	4	3	2	1
15. Audio-visual materials were instrumental to my learning.	4	3	2	1
16. My understanding of the basic concepts on the first nursing course complimented my learning in the second nursing course.	4	3	2	1
17. There was a variety of teaching methods and materials used to accommodate my individual needs.	4	3	2	1
18. The first nursing course was free of the fear of failing.	4	3	2	1

		SD 4	A 3	D 2	SD 1
19.	The learning units in the first nursing course were designed to begin with simple concepts and to proceed to more complex concepts.	4	3	2	1
20.	I was able to learn the theory at my own pace.	4	3	2	1
21.	The desire of the instructor to help me motivated me to learn. (treated me as an OK person)	4	3	2	1
22.	The quality of instruction enabled me to meet objectives of the course.	4	3	2	1
23.	Extra time was available to me to clarify difficult concepts.	4	3	2	1
24.	The grades that I earned were directly related to my understanding of the concepts.	4	3	2	1
25.	The grades that I earned were mainly the result of memorizing content.	4	3	2	1
26.	Our course objectives were clear to me.	4	3	2	1
27.	My clinical instructor was sensitive to my needs.	4	3	2	1
28.	The classroom instructors were sensitive to my needs.	4	3	2	1
29.	I learn best by the lecture format.	4	3	2	1
30.	I learn best by small group discussions.	4	3	2	1
31.	I learn best in nongraded laboratory setting where I have the opportunity to practice and receive reinforcement until objectives are met.	4	3	2	1
32.	The instructors utilize a variety of teaching strategies to teach theory content of the course.	4	3	2	1

		SA 4	A 3	D 2	SD 1
33.	I felt comfortable and prepared for the second nursing course because I felt that I had mastered the objectives of the first nursing course.	4	3	2	1
34.	It would have been helpful if the tests were non graded and used only to diagnose my learning needs.	4	3	2	1
35.	I feel that I have mastered the content of the first nursing course.	4	3	2	1
36.	Compared to other courses, the nursing tests were less threatening.	4	3	2	1
37.	Given more time, I could have earned an A.	4	3	2	1
38.	Assignments were always clear to me.	4	3	2	1
39.	I was able to learn by diagnostic tests.	4	3	2	1
40.	Summative tests were fair.	4	3	2	1

Please share the results of the questionnaire with me. _____

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